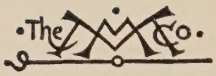
A TEXT-BOOK IN THE PRINCIPLES OF EDUCATION



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A TEXT-BOOK

IN THE

PRINCIPLES OF EDUCATION

BY

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IN ADELPHI COLLEGE, BROOKLYN

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I DEDICATE THIS VOLUME

TO MY WIFE

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PREFACE

In the following pages I have endeavored to present in a systematic way the outlines of a theory of education from the point of view of evolution. The evolutionary conception has been applied to educational theory more or less consistently by all writers on the subject since the time of Froebel. The development of more and more scientific knowledge in regard to the history of life, of mind, and of society has, however, made possible constant reconstruction of the general principles, in terms of which the process of evolution through education is to be conceived. I have tried to draw into a unified scheme what seem to me the essential features of current thought on this subject to-day.

To accomplish this result in anything like an adequate manner, and at the same time make those practical applications of principles which a book on the "Principles of Education" may be expected to offer, it has been necessary to give to certain fundamental conceptions a very condensed and, I fear, somewhat abstract treatment. Such is especially the case in the chapter on "Conscious Learning," which, had space been clearly available, I should gladly have expanded by the addition of more illustration. In the chapter on "Readjustment, its Meaning, Conditions, and Methods," I have given the essential features of my theory of evolution. To the schoolman interested primarily in practice this may seem like a somewhat formidable introduction to so practical a subject as the Principles of Education should be. I am, however, convinced that the conceptions there presented form the clew to at least one fundamental aspect of the meaning of the process of education, — *i.e.* its part in the mechanics of

evolution. It is, moreover, upon these conceptions that the later more practical phases of the treatment turn. I hope, therefore, that the reader interested in the "practical" will not lose heart too soon.

Since the conception of evolution plays so important a part in the discussion, I have of necessity treated mind, conscience, and, indeed, all the higher powers of the individual from the "functional" or utilitarian point of view. I have, however, tried to combine with this an idealistic interpretation of the history of life, both in the individual and the race, which I trust will not escape attention for lack of emphasis. I am confident that in the long run Idealism cannot lose from the study of facts, and, while the trend of thought and practice in educational matters to-day may seem discouraging to those who regard the higher culture as too precious to be put to use, it is not unlikely that a newer Idealism of service may prove on the whole a more satisfactory philosophy than the older one that consisted so much in withdrawal from the utilities.

In the hope that the book may prove widely serviceable as a text on the principles of education, I have added a topical outline which appears as marginal notes. At the end I have offered a teacher's bibliography, which aims to give one or a few easily available references on each of the principal topics discussed in the text.

The book is itself the result of the gradual evolution during the past ten years of an attempt on my part to treat the principles of education as an application of a conception of evolution. It began with the endeavor to draw together three significant biological facts: reproduction, the helpless period of infancy, and the lack of inheritance, at least to any appreciable degree, of acquired characters. The results of this bit of reflection are given in a short paper entitled "Some Problems in Education and Evolution," published in the University

of California Publications in Philosophy, Vol. I, 1904. This paper constitutes the foundation of the ideas developed in the chapters on "Readjustment, its Meaning, Conditions, and Methods," and "Education and Heredity." The material of the other chapters has been slowly brought into the present form, and it is difficult to make acknowledgments to the many sources of influence that have determined its character. I wish, however, to thank the students and friends who during these years have, by their appreciative attitude and helpful criticisms, done very much toward making possible the publication of the book. Especially I acknowledge my obligation to Professor Monroe, the editor of this series, for many valuable suggestions in putting my material in its final form, and to my wife for her assistance toward that same end.

Adelphi College, Brooklyn,
May, 1910.

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A TEXT-BOOK IN THE PRINCIPLES OF EDUCATION

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CHAPTER I

INTRODUCTION: VARIOUS CONCEPTIONS OF THE AIM OF EDUCATION

SECTION 1. *The typical ideals of personal culture*

The conception of the process of education dependent on the conception of its aim

No one can formulate a theory of education except from the standpoint of a conception of its aim. Even though we embrace in our treatment those phases of the life of lower animals that foreshadow human education, our thinking will be dominated by the teleology manifest therein. Education everywhere has a function, and it is upon one's view of the nature of this function that not only his conception of the significance of the entire process, but also his analysis of its details, will largely depend. It will, therefore, be practically necessary for us to consider first of all the use in terms of which education can most accurately be conceived.

The two leading aims: culture and practical efficiency

In general, the aims of human education can be grouped under two main headings: efficiency and personal culture. These we commonly regard as the utilitarian and perfectionistic aims, associated respectively with the worldliness or the idealism of peoples or of teachers. They are not utterly divorced. It would be, perhaps, true to say that no age, however persistently it pursues the ideal of personal culture, fails to take account of its uses; for the very devotion to this aim which is characteristic of the time makes it practically certain that the surest road to social recognition, and so the

highest utility, will be found in an apparently non-utilitarian culture of the individual. Moreover, there is probably no utilitarianism so crass that it does not find some few activities worth while for their own sake, some few possessions that can be idealized and regarded as ends in themselves.

Although it is doubtless impossible for any age to free itself entirely from utilitarianism or idealism, nevertheless, it may with justice be said that learned education, the education of the school, from the Middle Ages until the nineteenth century, was dominated by the conception of personal culture. This ideal appeared in various forms. Stating the most important of these in their historic sequence, we have: (1) spiritual culture; (2) aristocratic, social, and æsthetic culture; (3) universal knowledge; (4) the perfectly disciplined mind; (5) the adequate self-realization of the individual. A study of the growth of these aims reveals an evolution in which the factor of utility plays a constantly increasing part. This fact and the reasons for it are sufficiently important to make it worth while to consider more carefully the specific nature of each ideal.

The ideals of personal culture

(1) *Spiritual Culture.* — During the Middle Ages the ideal of learned education was predominantly religious. With the development of the Universities, it is true, the professions of law and medicine became provided for in the educational scheme. Nevertheless, the characteristic feature of the instruction of the time was the religious purpose. The perfect life is conceived to be the life of attention to purely spiritual things. Education is the purification of the spirit from the taint of earth. In the words of a leading scholar and thinker, a monk of the twelfth century, Hugo of St. Victor: —

Mediæval ideal of spiritual culture

"The end and purpose of all human actions and pursuits which are controlled by reason ought to be this, that the integrity of our nature may be restored, or the constraint of those defects under which our present life lies be relieved. More

plainly: there are two elements in man, good and evil, nature and sin. The good, because it partakes of the nature of existence itself, because it is corrupted, because it is deficient, must be restored by training. The evil, because it is sin, because it is corruption, because it partakes of the nature of non-existence, should be shut out, and if it cannot be entirely exterminated, at least it should be controlled through the application of a remedy. . . . The integrity of human life should be maintained by two means, knowledge and virtue, which together constitute the sole thing in us that is like the supernatural and divine existences." [1]

Spiritual culture an ancient ideal

This conception of the purpose of life was not original with the Middle Ages, but it was derived from a long line of devotees, reaching back to the remote ascetics of the earliest civilization. Plato symbolizes it as: —

"The release of the prisoners from chains, and their translation from the shadows to the images and the light, and their ascent from the underground den to the sun . . . elevating the highest principle in the soul to the contemplation of that which is best in existence." [2]

Such a notion did not of necessity utterly disparage the inferior knowledge, the aim of which is health and earthly prosperity. To Hugo that was a knowledge of "instrumentalities," indispensable, indeed, but required merely because of our fallen state. The mediæval scholastic world did not waste an inordinate amount of time in the endeavor to master the empirical facts of "those objects which have both beginning and end and are called temporal." [3] The world beyond the gates of monastery and cathedral was overawed by the majesty and the mystery of the conception of life illustrated behind them. The highest aspirations of the finest spirits, whether of priests or of

[1] *Libri Didascalici*, Book VI. [2] *Republic*, Book VII.
[3] *Libri Didascalici*, Ch. VII.

laymen, were turned toward the eternal order. Excommunication was the direst of penalties. The recovery of the Holy Land from the Infidel was the loftiest of enterprises for the warrior, who alone among those who were not clergymen possessed a profession that could be called noble.

The Renaissance and the revival of worldly culture

(2) *Aristocratic, Social, and Æsthetic Culture.* — The Renaissance constitutes an attack upon the supremacy in learned education of the religious ideal. Its characteristic feature is the development among the aristocracy of an interest in the literature and culture of classical antiquity, which the revival of learning had recently brought to light. Important causes for this interest were the growth of wealth, the cessation of general warfare, the gradual evolution of elegant court life, among the refined activities of which poetry and letters played a constantly increasing part, and in the field of statecraft the development of diplomacy as a partial substitute for generalship. All these conditions tended to create a society to which the humanist was most welcome. He brought artistic social ideals and charming employments for leisure. He brought a standard in linguistic matters that appealed powerfully to those who wished to lead in the struggle where persuasion was so rapidly supplanting mere force. The new learning affected the old scholastic world, it is true, but far stronger was its effect upon the polite society which needed occupation for its new-found leisure. Hence, it may be said that the dominant purpose of that literary education which was characteristic of the Renaissance was that it should be liberal in the ancient sense. It was preparation for leisure and for leadership. The first of these aims is well brought out by one of the ablest of humanists, Guarino, Professor of Rhetoric at Bologna and at Ferrara: —

Renaissance ideal of education for leisure

"I would urge you to consider the function of letters as an adornment of leisure. Cicero, as you remember, declares

Learning to be the inspiration of youth, the delight of age, the ornament of happy fortunes, the solace of adversity. A recreation in the Study, abroad it is no hindrance. In our work, in our leisure, whether we keep vigil or whether we court sleep, Letters are ever on hand as our surest resource. Do we seek refreshment for our minds? Where can we find it more happily than in the pursuit which affords alike utility and delight? If others seek recreation in dice, in ball play, in the theater, do you seek it in acquiring knowledge. There you will see nothing which you may not admire; you will hear nothing which you would gladly forget. . . . A life spent amidst such interests deserves the title which the younger Pliny gives to it — "the true, the kingly life"; or as Attilius was wont to say, no leisure could be more nobly occupied than that spent amongst books. Learned labor, he said, was 'pleasanter than any pleasures.'" [1]

Here then we have the characteristic purpose of humanistic culture. But it is not to be supposed that learning was not regarded as having, in addition to its uses as an adornment of leisure, some value for the business of life. This second aim is brought out with especial clearness by the eminently practical Æneas Sylvius, at one time secretary to the Emperor Frederick III, later Pope Pius II. In writing concerning the education of Ladislas, the youthful King of Bohemia, he says:—

Renaissance ideal of education for statecraft

"Need I, then, impress upon you the importance of the study of Philosophy, and of Letters, without which indeed Philosophy itself is barely intelligible? By this twofold wisdom a Prince is trained to understand the laws of God and of man, by it we are all enlightened to see the realities of the world around us. Literature is our guide to the true meaning of the past, to a right estimate of the present, to a sound forecast of the future. Where letters cease, darkness covers the land; and a Prince who cannot read the lessons of history is a helpless prey of flattery and intrigue." [2]

[1] *De Ordine Docendi et Studendi.* [2] *De Liberorum Educatione.*

The prince and the statesman may, therefore, find letters the true guide to an insight into those laws of human nature and of society upon which the craft of politics depends. Above all they may thus learn to know more clearly those laws of God by which the conduct of states should be controlled.

The essay from which this extract is taken is largely devoted to showing the value of humanities in the art of government. This is not their sole utility. The same laws of God and man that are fundamental for the statesman are the basis of the art of social and civic life for the community in general, for those who are governed as well as for those who govern. This further extension of the practical value of letters to include their reaction on morals and customs in society at large is well defended by the man who is, perhaps, the greatest of humanists, Erasmus. Of him Professor Woodward says :[1] —

Renaissance ideal of education for social culture

"The organized life of the civilized community is to Erasmus the only life worth living; his educational aim is therefore a social aim. It does not stop short with the perfection of the individual, the preparation of a self-contained life. When he speaks of a knowledge of Christ and his glory as *totius eruditionis scopus*,[2] he by no means implies that the end of right training is personal salvation. He has given in *De civilitate morum puerilium* his description of education in definite terms. '*Sicut prima (pars), ita præcipua est ut tenellus animus imbibat pietatis seminaria, proxima ut liberales disciplinas et amet et perdiscat, tertia est, ut a vitæ officia instruatur, quarta est ut a primis statim ævi rudimentis civilitati morum adsuescat.*'"[3]

To Erasmus letters constituted one of the vital elements in this social culture that would make the recipient refined,

[1] *Erasmus Concerning Education.* [2] The extent of all learning.

[3] "The first and also the principal function (of education) is that the tender spirit may drink in the seeds of piety, the next that he may love and learn thoroughly the liberal studies, the third is that he may be informed concerning the duties of life, the fourth is that from the earliest childhood he may be habituated in courteous manners."

courteous, conscientious, and capable in those political and social functions the existence of which formed for the man of education of that age his proper vocation. Put briefly, the conception is that of learning as preparation for effectiveness in social relations, and in this may be found the broadest ideal of the Renaissance.

Knowledge as the most nearly universal of the ideals of personal culture

(3) *Universal Knowledge.* — In this we have the ideal of the learned man, the philosopher, scholar, or scientist. Of all the types of the ideal of personal culture it is most general, and, unless it is expressly excluded, most likely to be found associated with the other forms. It is the ideal of Plato and Aristotle. In a religious guise it becomes the "beatific vision" of Dante. We note its presence in the views of Hugo of St. Victor, already quoted. To him knowledge constituted an indispensable instrumentality of salvation, as well as the goal of this process. In the former capacity it concerned temporal affairs, in the latter it dealt with the Divine.

The ideal of universal knowledge received new life and a new form as a result of the learning, the philosophy, and the science of the Renaissance. The extent and the possibilities of knowledge of temporal matters were suddenly and enormously widened. Men plunged with passionate enthusiasm into the task of exploiting these new fields. The interest in worldly knowledge threatened to sweep away that in the Divine. Indeed, Divine Knowledge came to be regarded as after all to be sought in a study of the *works* of God as manifest in nature and in humanity. Thus Milton declares: —

Renaissance and Reformation ideal of education for piety and knowledge

"The end then of learning is to repair the ruins of our first parents by regaining to know God aright, and out of that knowledge to love Him, to imitate Him, and to be like Him, as we may the nearest by possessing our souls of true virtue, which being united to the heavenly grace of faith makes up the highest perfection. *But because our understanding cannot in*

this body found itself but on sensible things, nor arrive so clearly at a knowledge of God and things invisible as by orderly conning over the visible and inferior creature, the same method is necessarily to be followed in all discreet teaching. And seeing every nation affords not experience and tradition enough for all kinds of learning, therefore we are chiefly taught the languages of those people who have at any time been most industrious after wisdom; so that language is but the instrument conveying to us things useful to be known."

In a similar strain Comenius asserts: —

Pansophic ideal of Comenius

"It is evident, then, that the ultimate end of man is eternal happiness with God. The subordinate ends are . . . to be (1) acquainted with all things; (2) endowed with power over all things and over himself; (3) to refer himself and all things to God, the source of all." [2]

And again: —

"The seeds of knowledge, of virtue, and of piety are, as we have seen, naturally implanted in us; but the actual knowledge, virtue, and piety are not so given. These must be acquired by prayer, by education, and by action." [3]

Bacon's pansophism as referring to scientific knowledge of nature

The educational ideals of Milton and of Comenius and even of Bacon may properly be termed *pansophy*. This word is a favorite one with Comenius, and it is illustrated in the scheme of textbooks that he planned, in the course of instruction that he would give, and in the contents of the schoolbooks which he wrote. The aim of education is "to know all things." No less pansophic is the extraordinary course of study that Milton outlines for his ideal academy: and Bacon, dreaming of a quick reconstruction of all the sciences under the guidance of his new method, proposed to complete by his own labors the account of the natural universe and to present this to the world in a series of works that might properly constitute the

[1] *Tractate on Education.* [2] *Magna Didactica*, Ch. IV. [3] *Ibid.*, Ch. VI.

foundation of the future course of study for all learned men. The age was encyclopedic. Largely unconscious of the possibilities of science and of the true significance of the new method, it planned to sum up earthly knowledge as the Middle Ages had striven to state the science of the Eternal.

The pansophic ideal of the seventeenth century cannot be said to have produced an immediate and profound reaction upon the schools. As a positive proposal for a course of study it was open to two criticisms. First, the new science had not as yet achieved enough to make a strong plea for admission to the curriculum, much less to hope to dominate it. Second, the odds and ends of knowledge that the devotees of realism put into their textbooks [1] resulted in instruction that must have been almost as meaningless and as dry as the memorizing of Latin grammar that it was to replace.

Attack of pansophy on the linguistic curriculum of the Renaissance

The strength of pansophy came from its protest against the exclusive devotion to linguistic study, the verbalism into which the classical schools had degenerated. The reformers succeeded admirably in displaying the formalism, the artificiality, the uselessness of much of the work of the school. They put humanism on the defensive, and paved the way for more rational methods of teaching, and for the expansion of the curriculum as new forces made this imperative. Meanwhile, humanism discovered a new argument to justify its program, and so successful was this argument that it put off about two centuries the day of doom for the classical curriculum. Moreover, this debate brought to the front more clearly than ever before the ideal of mental discipline, one of the most important of the ideals of personal culture.

(4) *Mental Discipline.* — The notion of education for discipline, as Professor Monroe points out,[2] harks back to the

[1] Compare the *Orbis Pictus* of Comenius.

[2] *Textbook in History of Education*, Ch. IX.

Mental discipline as a defense of the classical secondary curriculum

Middle Ages, and from thence to the sources of the religious conceptions at that time dominant. Historically it has been associated with the negations of asceticism, of self-control, and of the righteous life. In the eighteenth century it came into a new service. It became the guard of honor for a linguistic curriculum long outworn, a forlorn hope to save schools and teachers until a new learning with new uses might come to their reënforcement. After all, say the disciplinarians, it does not matter what we study so long as our faculties are trained. The refined nature, the keen mind, the steady will, — these are the almost certain outcome of that excellent system of discipline that has come down from the Renaissance.

Wolf on disciplinary education

"This therefore is the point of the classical studies: all-round development of all powers of the soul, of the intellectual as of the moral and æsthetic, through discipline of every kind, from the most elementary to the most advanced and difficult." [1]

Thus Paulsen sums up the arguments of F. A. Wolf (1759–1824) in defense of the classical program in the gymnasium. The conception which we here find so clearly defined in the eighteenth century was coming to the front in the seventeenth. Among those who betray its influence in the earlier period, Professor Monroe singles out John Locke.

Locke on mental discipline as the ideal of culture

"The business of education is not to make the young perfect in any one of the sciences, but so to open and dispose their minds as may best make them capable of any when they shall apply themselves to it. . . . It is therefore to give them this freedom that I think they should be made to look into all sorts of knowledge and exercise their understanding in so wide a variety of stock of knowledge. But I do not propose it as a variety and stock of knowledge, but a variety and freedom of thinking; as an increase in the powers and activities of the mind, not as an enlargement of its possessions." [2]

[1] *Geschichte des gelehrten Unterrichts:* Paulsen.
[2] *Conduct of the Understanding.*

Locke not a narrow disciplinarian

Although Locke thus clearly conceived the idea of mental discipline, he does not use it to support the narrow classical curriculum, but rather in defense of a broad and varied one. Stated in this form, the disciplinary idea is unquestionably capable of a strong defense, a defense that will be considered in detail later.[1] That Locke was not a narrow disciplinarian may further be seen from his rejection of the common notion that mere strength of memory can be increased by training.

"I hear it said, that children should be employed in getting things by heart, to exercise and improve their memories. I could wish this were said with as much authority of reason, as it is with forwardness of assurance, and that this practice were established upon good observation more than old custom. For it is evident that strength of memory is owing to an happy constitution, and not to any habitual improvement got by exercise." [2]

Here Locke is especially attacking the prevalent defense of the custom of "learning pages of Latin by heart," which he declares "no more fits the memory for retention of anything else than the graving of one sentence in lead makes it the more capable of retaining firmly any other characters."

Thus his statements furnish us with an account, on the one hand, of the narrow disciplinary view, at any rate so far as this is embraced in the discipline of the memory, and, on the other, of a broad view, which, although it ran counter to the prevailing practices in the classical schools, was nevertheless a notion of mental discipline.

Prevalence of the narrow rather than the broad ideal of discipline in the schools

Unfortunately for the progress of the schools it was the narrow rather than the broad conception of mental discipline that came to prevail during the next two centuries. As the end of education was thought to be the training of the powers, so the ideal curriculum was thought to be, not one rich in a variety

[1] Compare Ch. X.

[2] *Thoughts on Education*, § 176.

of content, but rather one bare of all material that through its inherent interest would distract the mind from attention to the mere process of learning. Such severe training was regarded as the one thing needful. A man educated by such methods had no need of a memory crammed with this or that bit of knowledge, nor would he be embarrassed by the lack of this or that mechanic art or professional device. Not the facts, but the ability to find them surely and quickly; not rules of thumb, but the intelligence to learn, improve, or invent these as circumstances may make wise; such powers are the basis of the highest efficiency, and they are the goal of standard education. So reasons the disciplinarian, and the argument seems fascinating, plausible. No doubt in part it is true.

But in practice it has one great tactical weakness. It can be used to defend almost any curriculum. It saved the schoolmaster while he remained exclusively a classicist. When, however, new subjects came one by one knocking at the gate of the temple of learning, it was futile to deny them admission on the ground that the old subjects furnished such valuable discipline. This merit must be ascribed to any study properly done.

Self-realization as the ideal of the Enlightenment

(5) *Self-realization.* — The Enlightenment of the eighteenth century brought with it a new realization of the importance of individuality. Whether as a revolution against the formalism, the artificiality, and the tyranny of social conventions, literature, religion, government, and education during the preceding absolutistic age, or as an attempt at a reconstruction of these phases of human activity on sound and stable foundations, it is the rights of man, the sacredness of personality, that are everywhere emphasized. In consequence, the age formulated more clearly than had ever been done before the ethical and educational ideal of self-realization.

The revolutionary phase of this ideal is illustrated in the

conception of negative education entertained by Rousseau. Education, he thinks, like government, should "let alone." The best government is that which imposes least restraint; the best education is self-education. This proposition is based on the idea that the child has within him all that is necessary to insure the most fitting destiny, and that his growth toward this goal is warped or stunted by positive education.

Rousseau on natural self-development

"Everything is good as it came from the author of nature; everything degenerates in the hands of man. . . . All that we have not at birth, and which we require when grown up, is bestowed on us by education. This education we receive from nature, from men, or from things. The internal development of our organs and faculties is the education of nature; the use we are taught to make of the development is the education given us by men; and in the acquisitions made by our own experience in regard to the objects that surround us consists our education from things. . . . Since the concurrence of these three kinds of education is necessary, *it is by that one which is entirely independent of us that we must regulate the two others.*" [1]

Education should therefore, Rousseau believes, be "according to Nature." It should aim simply to insure the free development of those potentialities with which nature has endowed the child. In this conception Pestalozzi and Froebel were followers of Rousseau. Thus Pestalozzi asserts: —

Pestalozzi and Froebel on self-realization

"All the pure and beneficent powers of humanity are neither the products of art nor the results of chance. They are really a natural possession of every man." [2]

"If we desire to aid the poor man, the very lowest among the people, this can be done in one way only, that is by changing his schools into true places of education, *in which the moral, intellectual, and physical powers which God has put into our nature may be drawn out.*" [3]

[1] *Emile*, Book I. [2] *Evening Hours of a Hermit*, No. 8.
[3] Quoted by Morf, Part 1, p. 211.

In the same strain Froebel declares :—

"By education, then, the divine essence of man should be unfolded, brought out, lifted into consciousness, and man himself raised into free conscious obedience to the divine principle that lives in him and to a free representation of this principle in his life." [1]

Emphasis on the need of instruction for self-development, especially by Herbart

But the Swiss and the German were not merely negative and revolutionary in their notion of the aim and process of education. To each the course of self-realization was one that required the constant support and supervision of the teacher lest it go wrong. The importance of this process of instruction is so much emphasized by Herbart that one is likely to lose sight of the fact that he too may be called a believer in the ideal of self-realization. Nevertheless, we cannot characterize his views otherwise.

"We call the first part of the educational aim, many-sidedness of interest, which must be distinguished from its exaggeration — dabbling in many things." This must be "proportionate many-sidedness. We shall thus get the meaning of the common expression 'harmonious cultivation of all the powers.'" [2]

This many-sidedness, according to Herbart, finds its function in furnishing the material in thought and feeling upon which moral strength of character may be founded.

"Thus it is not a certain number of separate aims that hover before us now, . . . but chiefly the activity of the growing man — the totality of his inward unconditioned vitality and susceptibility. The greater this totality — the fuller, more expanded and harmonious — the greater is the perfection, and the greater the promise of the realization of our good will." [3]

[1] *Education of Man*, § 5.

[2] *Science of Education*, Book I, Ch. II, II.

[3] *Ibid.*

Thus the Herbartian conception is that of feeding all the interests that are innate in the individual, so that when fully expanded, or when, in other words, the circle of thought is complete, the will may be free and righteous. Here we have the ideal of perfection, and of perfection through what is in effect self-realization, although the realism of Herbart leads him to dwell rather more upon the instruction of the teacher than upon the self-activity of the pupil.

Inclusiveness of the ideal of self-realization

In the idea of self-realization the conception of personal culture receives its most philosophic, its most inclusive statement. The "harmonious development of all the powers" constitutes a formula that covers spiritual culture, social and æsthetic culture, knowledge, and discipline. These powers may be conceived as the faculties of the disciplinarian, the interests of Herbart, or the instincts of modern psychology. We may with the evolutionist look upon their development as the budding forth in the individual of the inheritance which we draw from the countless ages of the history of life; or after the fashion of the idealists, Fichte and Hegel, we may regard this process as the revelation of mind to itself.

Conception of self-realization in need of further definition

These considerations suggest that our formula is so comprehensive as to be meaningless. But if it constitutes a summary of all the ideals of personal culture, it can be no more devoid of definition than the factors of which it is composed. Indeed, one may, if he choose, show that the endeavor to define each of these ideals is likely to involve ultimately all the others. Spiritual culture finds the virtues it inculcates largely by noting the needs of society. Universal knowledge is an aim both of spiritual culture and of education for leisure. Mental discipline includes spiritual discipline, and, like it, gets meaning from the social, artistic, and intellectual uses to which it can be put. Thus we may suspect that, if self-realization is an indefinite ideal, its vagueness arises from an inherent quality

in all ideals of personal culture. This point becomes more clear when we compare this educational aim with its antithesis, the aim of efficiency.

Section 2. *Efficiency versus personal culture as the educational aim*

Method of determining the meaning (1) of personal culture;

Any one who conceives the ideal of education to be personal culture is compelled to look within the individual to find that which constitutes the objective point of all training. Thus some form of psychological analysis of the personality must be invoked. We look within, and find a soul longing for perfection of some sort, — for an eternal reign of righteousness to satisfy its ethical cravings, for universal knowledge to meet its intellectual powers and aspirations, for beauty and social elegance to please its taste, — and in these somewhat abstract objects toward which the elemental human functions direct themselves we find the goal of education. Or, perhaps, looking still further within, we find in the cultivation of the functions themselves without reference to results a more fundamental educational aim. Mental discipline or self-realization, processes which derive their content wholly from an analysis of the nature of the individual, are fixed upon as the essence of education. One is led to think that the schoolmaster is not concerned with satisfying human cravings, but rather with nourishing these and training their power to feed themselves.

(2) of efficiency

On the other hand, the ideal of efficiency directs the attention not within, but outward to the environment, to the conditions of life. Assuming human nature to be what it is, the utilitarian considers the problem of training it to do in the life situations in which it finds itself the things that are felt to be worth while. The question is not what powers does the individual possess, but rather what powers will he need?

Psychological analysis from this point of view finds its use as a method of arriving at a knowledge of the means of education rather than of its ends. To teach a child, one must know what and how this child can learn. But to determine the ends of education, we must discover by objective analysis the nature of the circumstances with which the cultured man will have to cope. He will need certain virtues to get on satisfactorily in society, and certain social accomplishments not only to enjoy himself therein, but also to command social influence, — that most important of all instrumentalities for effective living. As for knowledge, he should have only what he can use, and if that be too much for him to learn, then the school should teach him that which he is likely to find of the greatest use. The question of whether the child is realizing the potentialities of his nature is unimportant. The vital consideration is whether he is learning to do those things which will make him as an adult one who in the judgment of the world is an efficient man and citizen.

Psychology as determinative of the means of education; the conditions of life as determining its end

One of the most interesting and best known formulations of the aim of efficiency is that of Herbert Spencer. Education, he thinks, is for "complete living," which includes

> "Not how to live in the mere material sense only, but in the widest sense. The general problem which comprehends every special problem is — the right ruling of conduct in all directions under all circumstances. In what way to treat the body; in what way to treat the mind; in what way to manage our affairs; in what way to bring up a family; in what way to behave as a citizen; in what way to utilize all those sources of happiness which nature supplies?" [1]

Spencer on the details of complete living

All this we may sum up in that favorite phrase of the evolutionist "adaptation to environment." By environment is here meant not merely that of physical nature, but also that of

[1] *Education*, Ch. I.

civilization into which nature has so largely been transformed. Thus President Butler declares:—

Butler on the factors of a complete adjustment to life of to-day

"The entire educational period after the physical adjustment has been made, after the child can walk alone, can feed itself, can use its hands, and has therefore acquired physical and bodily independence, is an adjustment to what may be called our spiritual environment. Thus education means a gradual adjustment to the spiritual possessions of the race. Those possessions may be variously classified, but they certainly are at least fivefold. The child is entitled to his scientific inheritance, to his literary inheritance, to his æsthetic inheritance, to his institutional inheritance, and to his religious inheritance. Without them he cannot become a truly educated or a cultivated man."[1]

We must be adjusted to this spiritual, this social environment in order to succeed, to be efficient. To find what education should aim to do we must study the specific problems that time, place, and circumstance will bring to confront the graduates of our schools. Each type of school will have a special task, if, indeed, the classification of its pupils does not reveal several tasks that are quite distinct. The teachers must study the natures of their pupils, not primarily to find out what there is to be brought to realization, but rather to discover to what uses they can be put. Psychological analysis reveals a mass of raw material in the way of instincts, powers, tastes, and it is the first problem of the schoolmaster to determine what of this crude ore it will pay to work.

Utility of the education for personal culture

In discussing the relation of these two ideals, efficiency and personal culture, I wish at this time to emphasize two points. The first of these has already been mentioned. It is that, although in different ages the school may emphasize now the one, now the other educational aim, nevertheless, neither is

[1] *The Meaning of Education.*

ever wholly neglected. All the forms of personal culture have fostered efficiency. The practical service of the ideal of spiritual culture in the social evolution of man was unquestionably enormous. Even the asceticism of the Middle Ages had a tremendous effect in exalting the standards of value in worldly conduct. The constant presence in those rude ages of the spectacle of cowl of monk and spire of cathedral kept the mind infused with the sense of the eternity that they symbolized. In stirring intellectual aspiration, heroic devotion to truth, justice, and charity, in promoting peace and good will, this consciousness worked to prepare not merely for eternity but also for civilization. The educational ideal of the Renaissance, aiming to train for leadership in statecraft and especially in diplomacy through literary and philosophic culture, was explicitly utilitarian. Bacon, who may be called the leading inspirer of the pansophic ideal, dreamed of a reconstruction of the conditions of life through the discoveries of the new science.

Bacon on scientific knowledge as a means of reconstructing the arts of life

"Now the true and lawful goal of the sciences is none other than this: that human life be endowed with new discoveries and powers. But of this the great majority have no feeling, but are merely hireling and professional; except when it occasionally happens that some workman of acuter wit and covetous of honor applies himself to a new invention; which he mostly does at the expense of his fortunes. But, in general, so far are men from proposing to themselves to augment the mass of arts and sciences that from the mass already at hand they neither take nor look for anything more than they can turn to use in their lectures, or to gain, or to reputation, or to some similar advantage." [1]

The possibilities of human intelligence, when once it turns itself resolutely to the task of endowing human life with

[1] *Novum Organum*, Book I, Aphorism LXXXI.

"new discoveries and powers," are partially foreshadowed in the dream of "Saloman's House" or the "College of the Six Days' Work," of which he says: —

"The end of our Foundation is the knowledge of Causes and secret motions of things and the enlargement of the bounds of Human Empire, to the effecting of all things possible." [1]

It is true that the pansophic ideal could hardly be said either in the school or in life to have been interpenetrated with the utilitarian spirit until in the last century. Herein lies, perhaps, the reason for its failure to influence more widely the curriculum. Realism had to show its uses before it could shake the reign of the classics, for these had been useful, and even after their specific use came to be doubtful, the argument from their disciplinary value was a distinct endeavor to save them because of the higher utility thus attributed to them. It follows that mental discipline aims in reality at efficiency, somewhat vaguely conceived. The ideal of self-realization however, seems to be without mitigation individualistic and perfectionistic. But it is to be noted that with Rousseau, and especially with Pestalozzi, it included the ability to make one's livelihood through a vocation rather closely in contact with Nature. So, too, Froebel, idealist though he was, found in the vocation a symbol of the divine activity which education should foster.

Personal culture includes but fails to emphasize efficiency

It may be asked why, if these ideals all have their utilitarian side, their reaction upon practical life, do we speak of them as ideals of personal culture rather than of efficiency. The answer is that it is largely a matter of emphasis. In the past we have been thinking of personal culture as an end in itself. Efficiency was not utterly neglected, but it was overshadowed by idealism. Similarly, it cannot be said that the utilitarian-

[1] *Nova Atlantis.*

ism of to-day means a total abandonment of idealism. It is merely a question of emphasis, and from the standpoint of general progress we may suspect that this shifting of attention has been on the whole a symptom of health. By this I mean no defense of utilitarianism as an ultimate philosophy of life, but rather an insistence on the place and service of the practical attitude in relation to human progress.

Function of the conception of efficiency as selective

The tentative definition of that service constitutes the second point which I wish to make in criticism of the relation of the ideals of personal culture and of efficiency. Put briefly, we may say that *the essential function of the conception of efficiency is to serve as a criterion to determine among rival courses of study and methods of teaching those which should prevail.* The ideals of personal culture furnish us no such criteria. One of the most effective expressions of this fact is that of Professor Dewey.

Dewey's criticism on the lack of meaning in the idea "harmonious development of all the powers"

"It is said the end of education may be stated in purely individual terms. For example, it is said to be the harmonious development of all the powers of the individual. Here we have no apparent reference to social life or membership, and yet it is argued we have an adequate and thoroughgoing definition of what the goal of education is. But if this definition is taken independently of social relationship, we shall find that we have no standard or criterion for telling what is meant by any one of the terms concerned. We do not know what a power is; we do not know what development is; we do not know what harmony is; a power is a power with reference to the use to which it is put, the function it has to serve." [1]

The positive conclusion to which this criticism forces us is that we cannot determine the end of education except by a consideration of the social life for an entrance to which it constitutes the preparation. To use Professor Dewey's illus-

[1] *Ethical Principles underlying Education.*

tration, as a manufacturer's aim is to supply a demand which he discovers from a study of what people like and need, so the teacher's work should be determined by a consideration of what society as a whole requires of those who succeed. Education should aim at adaptation to environment.

All ideals of personal culture need definition through use

When we endeavor to put content into any of the ideals of personal culture, we find the same difficulty as with the ideal of self-realization. What is spiritual culture? What education prepares for eternity? We know so little about that career of immortality that we are compelled to decide in favor of that which demonstrates its value for life here, and it is evident that those spiritual excellences that have survived as permanent aims for the culture of to-day are such as have proved their efficacy in fostering our civilization. Asceticism remains as long as extreme examples of disregard for worldly success are necessary to progress in general worldly prosperity. It tends to disappear just in so far as it becomes useless. Social and æsthetic culture have no means of determining what fashions and manners or what artistic cults should be encouraged in education except as these contribute to the general effectiveness of social life, or, in other words, furnish the adaptation to a social order that proves through persistent survival its title to permanence. The absurdity of the pansophic scheme of education, when faced with the almost infinite variety of knowledge that research has to-day accumulated, is so evident that the need of a criterion to winnow out the small fraction of the known that should be taught goes without question. Again, we have seen how mental discipline, since it can be obtained equally well from any subject, provided this be studied properly, leaves us to study what we choose, or what the schoolmaster prefers that we choose.

Now an aim of education that does not tell us what the content of education should be is manifestly inadequate.

The ideals of personal culture leave the schoolmaster to lead his pupil whither he will, through this desert of famine or that meadow of sport, and on the way he may gather flowers or pebbles or dust and ashes. There is no ultimate goal the arrival at which is the evidence that the route has been properly chosen and the genuine treasures of the wayside discovered and garnered.

Inadequacy of the aim of efficiency to determine the ends which utility should serve

On the other hand, the test of efficiency when taken alone is equally inadequate to determine the content of education. The explication and defense of this view will for the most part be left until the outlines of the theory of education that it is intended to present are all sketched in, but we may here note that whatever is useful is useful for something. Hence, in the final good things, when once they have been discovered, must lie the ultimate value of all our utilities. It follows that, while Professor Dewey's criticism of the ideal of self-realization is sound, the implication that it conveys as to the adequacy of the idea of adjustment in determining the definite character of the content of education is in need of amendment, or at least of supplementary explanation. He finds the aim of education in adjustment to social conditions. It is so largely because these social conditions are embodiments of the approved methods of meeting the wants of the individual. It is my conviction that these wants can be traced to no other source than the nature of the individual who feels them.

In the succeeding pages an attempt will be made to develop and defend this view. It will suffice here to recall our preliminary statement of the function of the ideal of utility. It serves as a criterion to determine among rival courses of study and methods of teaching those that should prevail. It does not answer the question *what*, but rather the question *which*. We must have alternatives before we can apply it. It does not create the content of education, nor the ends of life, but

rather selects the one to fit the other. Like the clearing house it produces no values, but serves the indispensable purpose of adjusting the values that exist.

Education a phase of evolution, since it aims at adjustment

The modern tendency is to approach the discussion of the theory of education from the point of view of adjustment. This formula can, moreover, be made to involve all the issues that our theory should embrace. Hence, we can do no better than be both modern and comprehensive by defining education in terms of adjustment, and proceeding to develop the implications of our definition. Since our formula is essentially one of evolutionary theory, we are naturally faced at once with the problem of the part of education in organic and social evolution. In this analysis we should discover the principles that underlie the nature of the process of education in the individual and the character of the educational agencies.

PART I

EDUCATION AS A FACTOR IN ORGANIC AND SOCIAL EVOLUTION

CHAPTER II

READJUSTMENT: ITS MEANING, CONDITIONS, AND METHODS

SECTION 3. *Meaning and fundamental conditions of readjustment*

Education as readjustment

WE have agreed to characterize the aim of education as efficiency, as adjustment. The process of education will therefore be that by means of which the individual is brought into adaptation to his environment or readjusted. This statement is, indeed, merely a formula, and it may sound at first like a barren one. But it should be remembered that the reasons that force its selection are drawn from the fact that it enables us to decide upon the content of education. Hence, however abstract it may seem, it is nevertheless indispensable, and an analysis of its meaning and implications in connection with life, whether individual or social, becomes in point.

Readjustment as universal as life

Let us assume that this investigation should begin with a study of the process of readjustment in its lowest terms. Evidently it is not peculiar to human beings, but applies to all life. If we conceive of education as readjustment, we can scarcely limit it to man. The distinction between *training* and *education*, the latter being confined in its application to humanity,[1] disappears. Education is an universal process in the world of organisms. Wherever there is an inner activity striving to preserve its identity and to foster its own peculiar aims in the midst of circumstances, some hostile, some favorable, there we have that struggle toward adaptation which

[1] See Rosenkranz, *Philosophy of Education*, § 14.

constitutes the fundamental nature of the process of education. We have outer stimuli, the effect of which is dissatisfaction; we have inner growth, the proper result of which is a restoration of the equilibrium of the feelings. The entire activity must be conceived as teleological, as having an end or aim.

Unconscious purposiveness in simpler forms of readjustment

The ascription of a purposiveness to the activities of all living beings does not involve one in the assumption that consciousness in the ordinary sense of the term is universal therein. To suppose this would certainly be to commit the "psychologist's fallacy." [1] One has only to mean by a purpose that tendency on the part of each living being to maintain and, perhaps, to enhance the conditions that make for the preservation of its identity. Herein we have a cause, *i.e.*, the permanency or continuity of the individual, that seems to point toward the future. It is *a force from before* rather than one *from behind*. Hence we may justly call it a final cause. That it has not yet assumed the form of clear consciousness does not imply that it must be construed merely as a blind energy. It is a force of direction, not one of execution.[2] Its function in the life of the organism is as little mechanical as is that of the most deliberate volition. An unconscious want is no more to be classed under the head of physical forces than is judgment itself. It is a principle of organization, of direction, even though it lacks awareness of its own significance. Its function seems to be that of deciding between alternatives, a statement that applies equally well to the human will and to the selective powers of the paramœcium.[3]

Education then means a struggle toward better adjustment.

[1] Compare James, *Principles of Psychology*, Vol. I, Ch. VII.

[2] See Solomon, *Alleged Proof of Parallelism from the Conservation of Energy*, *Philos. Rev.*, March, 1899.

[3] Compare Jennings, *Behavior of the Lower Organisms*, Ch. III.

Controlling factors in readjustment

It exists because there is a lack of harmony between the organism and its environment, and because the organism has within it a sensitiveness to this condition, and the power to initiate activities that on the whole make for better conditions. The controlling forces in education are the wants of the organism, its capacities, and the external conditions with which these internal forces are striving to cope. All of these forces are intimately related to each other. The capacities evolve into actual powers under the stimulus of the conditions that they seem designed to master. Whether they are merely accidental, inexplicable variations, or whether they are necessary, though at first hidden, properties of living beings, they wait the proper conjunction of circumstances before they can reveal themselves and act. So, too, the wants of the individual take form under the pressure of events. The external conditions set the standard in terms of which desire and capacity are realized, or made specific and concrete. On the other hand, mere circumstances do not account for life, for growth, for evolution. It is the merest platitude to say that conditions do not make the man, but only offer him his opportunity. It is quite as true that external forces can do nothing for any plant or animal except to stimulate inherent tendencies. Cultivation can provide only a better chance for growth, which is always from within.

Interdependence of the external and internal factors in readjustment

Evolution not explained by environmental conditions

By those whose studies have led them to observe the tremendous influence that nature has upon history, or the extent to which living processes can be explained in terms of the physical movements and the chemical reactions found illustrated in the phenomena of the inorganic world, the environment is likely to be regarded as all in all. That each new research into the causes of social evolution states more clearly the external conditions to meet which human growth took place cannot be denied. So, too, each new study of the physics

of living matter convinces us that the intelligent comprehension of its laws can come only through physics and more physics. But while the burden of our effort is thus turned toward the mechanics of life and society, we can scarcely say that the *meaning* of the processes is in the least made clear by such studies, any more than a thorough knowledge of the mechanism of a threshing machine would convey to a person who knows nothing whatever about grain any conception concerning its function. Even should the chemist by some trick of manipulation succeed in developing in his laboratory a living thing, he could not understand it except in terms of those internal wants and capacities, the analogue to which he finds only in himself considered as a being having feelings and will.

The fact that both desire and capacity may be said to be dependent upon external conditions for the form that they assume cannot, therefore, be advanced to destroy our natural belief in their distinctness and reality. We have here something more than the physical facts in terms of which they express themselves, as the meaning is more than the word. Accepting, therefore, both the internal and external factors in the life process as equally fundamental, let us attend again to the nature of the situations in which the readjustment that we have called education takes place. Manifestly there must be a lack of harmony between organism and environment. Moreover, if the process of growth is to be continuous, there must be in operation agencies that continually frustrate the endeavor of the organism to effect complete adjustment. As a matter of fact, we find that this is so. No such thing as complete adaptation exists in nature. Even where it seems to exist, experience proves that there are forces at work that will ultimately destroy the balance and result in change in the direction either of growth or decay.

Education stimulated by lack of adaptation

These forces may be summed up under two heads, — changes

in the environment and changes in the organism. That the first of these exists and is continually operative to provoke new adjustment on the part of the organism is patent. The character of such changes and the types of environment dependent on this fact offer the initial explanation of the functions of the various classes of living beings and the clew to a comprehension of their evolution. But external change, although the initial stimulus of growth, is not the only one. The process of growth brings about changes in the organism that themselves tend to throw it out of gear with its life conditions. Since growth is change, it is subject to a law of inertia that forbids it to stop when the external conditions that stimulated it cease to trouble. Newton's first law of motion has its analogy in the physiological and psychical realms. The fuller discussion of these two principles of change will follow in the two succeeding sections.

Changes that bring about lack of adaptation

To summarize the discussion of this section, we may say that, accepting the definition of education in terms of adjustment, we undertake to study more closely the meaning and implications of this as a general process of life and of evolution. It is found to consist in the development on the part of the organism of certain powers whereby it may better secure the satisfaction of its wants in a given environment. Wants and capacities both get their definition from the circumstances in conjunction with which they appear. They are, however, more than these circumstances, and reveal in themselves the true significance of the life process, which is, therefore, teleological. The occasion for growth is furnished primarily by changes in the environment which stimulate growth. This process of internal expansion, however, is subject to a law of inertia that tends to destroy any equilibrium which may be established between the organism and its external conditions.

Summary

Section 4. *Environmental variability*

Environmental variability and education

It has been said that changes in the environment constitute the primary stimulus to growth. A variable environment will, therefore, be one in which the process of readjustment, of education, will be much in evidence. In general, the variability of environments is in proportion to their complexity. If we were to characterize environments as lower and higher, meaning by these the conditions of life of lower and higher orders of living beings, we should find the higher environments by far the more complex and variable. Since the amount and nature of this variability determines the quantity and character of education, a preliminary comparison of lower and higher environments from this point of view is here in place. To facilitate this purpose the following contrasts are suggested: (1) uniform environments *versus* those affected by seasonal change; (2) local *versus* regional environments; (3) physical *versus* social environments; (4) natural *versus* artificial environments.

Variability of environments of seasonal change

(1) *Uniform environments* versus *those subject to seasonal change.* — This contrast may be concretely illustrated by the deep-sea environment at the one extreme, and at the other, land surfaces in temperate or frigid zones. In general, of course, torrid conditions are more uniform so far as seasons are concerned than temperate or frigid ones, and bodies of water are less affected by such changes than land surfaces. Not only do these cases illustrate respectively uniformity and variability in temperature, but also uniformity and variability in food supply as well. This latter is to a great extent dependent on temperature, and, moreover, the constant movements in masses of water go far toward equalizing any changes in nutritive conditions that might otherwise come to exist.

In contrast to this simplicity and uniformity, regions of

seasonal change present complexity and variety. To meet this condition new adaptations, new functions appear in the organism. The higher environment is one that can be inhabited only by more complex and more flexible species than those which in the dawn of life find themselves able to exist in the uniform conditions of the sea. The functions that cope with the variations in temperature, food supply, moisture, etc., which characterize seasonal conditions, may be classified under two heads: first, methods of temporary protection against the changes that the seasons bring; second, the power of movement by which the animal is able to go from favorable to unfavorable localities.

Two methods of adaptation to seasonal change

The protective adaptations are of great variety. Trees in temperate or frigid zones change their internal conditions to prepare for the rigors of winter. The storing of food in the tuber protected by the earth is another device on the part of some plants to preserve the life of the individual during winter and to provide it with a capital of food in the spring. Water may be stored by desert plants. Animals hibernate, meanwhile consuming, if animation be not suspended, their own tissue. With some the covering grows heavier with recurring cold. Some simple organisms are desiccated in dry seasons, and, as it were, come to life again when water is supplied.[1] Others contract and become encysted as a protection against cold or other destructive physical or chemical forces. Fish may become practically frozen stiff, so that vital activities are suspended for the time being, to be resumed when the proper temperature recurs.[2]

(1) Protective adaptations

(2) *Local* versus *regional environments.* — Protective adaptations enable life to continue, usually in a passive form, during the unfavorable season. They are for the most part negative

(2) Power of movement

[1] Compare Verworn, *General Physiology* (tr. by Lee), p. 279.

[2] *Ibid.*, p. 288.

adjustments. The power of movement permits its possessor to seek a favorable environment, and thus actively to continue the life processes without interruption. But change of place, although it brings with it a certain uniformity in vital conditions that is not enjoyed by organisms inhabiting one spot or narrow locality, nevertheless requires a complexity of powers and a flexibility in their use that far more than compensates for the variety of protective adaptations that power of movement makes unnecessary. In brief, the muscular and sensory organs become necessary, the one to perform the movements, the other to direct these performances lest movement lead into instead of away from unsatisfactory or dangerous conditions. To connect these organs the nervous system must exist, and to supply the energy necessary for this vigorous type of life a more specialized digestive, circulatory, and respiratory system must be developed. The animal requires a peculiar and already partially prepared sort of food. It is a parasite upon the plant world, or, perhaps, upon other animals. It requires a more uniform temperature and supply of air, food, etc. The deprivation of any necessity more quickly results in death than in the case of the plant. Injury to one part is more likely to bring about the death of the whole.

Movement involves a more delicate body and the power of perception

In consequence, the animal must be able to detect the signs of lack of adjustment very quickly. Indeed, it must be able to take account of signs that merely anticipate lack of adjustment unless something is done to prevent this. In general, the function that takes account of these symbols is that of sensation. The various forms of sensation are cognizant of the greatest variety of conditions. Delicate changes in temperature or pressure, chemical properties that distinguish tastes or odors, the form and color of objects and the sounds that emanate from them, in short, the great world of perceived things is for the higher animal called into existence by the

Evolution of the sense, or symbolic world

senses in order that it may by interpreting this aright preserve that uniformity in specialized conditions of life that is necessary for its existence. Its great resource is its power of movement. Its great guide in utilizing this resource is its power of sensation.

Variability in the meaning of sensory symbols

This world of sense is therefore a symbolic world. It does not consist of changes in the vital conditions, but rather in that which is symbolic of these. The symbols are far more numerous, far more complex and variable than the things symbolized. An enemy or food may be suggested by a perception of the eye, by a sound, or by an odor. Indeed, the range of symbols that may be significant seems practically unlimited, whereas the conditions that they indicate are comparatively few and simple. The meaning of a symbol depends upon the context of sensations. A patch of red swaying gently to and fro means a harmless leaf; one that moves steadily in the same direction may mean a deadly foe. The variety and complexity of these symbols implies their variability. The interpreting mind is forced continually to learn new meanings and to unlearn old ones, to distinguish between the significance of a symbol in one context from that in another, to discriminate between infallible and probable signs.

Protection through vigilance

The more extensive the range of symbols that the animal can perceive and interpret, the greater becomes its power of effecting adjustments through anticipatory action, and hence the more secure its life. It purchases safety at the price of eternal vigilance. It must be alert to a multitude of things that for the lower type of life simply do not exist. Moreover, its power of interpreting carries with it a power of mistaking symbols. It must possess the power of quickly correcting mistakes, of making reinterpretations, or its weapon of defense will prove only the instrument of its own destruction. Capacity for education must keep pace with the evolution of power of movement and its directing sentiency.

Forms of social contact

(3) *Physical* versus *social environments.* — The contrast between physical and social environments illustrates similar facts. Social phenomena may take the form of competition or that of coöperation.

Varieties of competition

The lowest form of competition appears as a result of growth and multiplication of living beings in any locality. Each affects the life of the others because all have a common feeding ground. Such competition is not direct, inasmuch as individuals do not directly attack each other, but merely affect the general life conditions by subtracting from the general fund of food, water, sunlight, etc. Higher methods of competing are more direct. Parasitism, where one individual or species devours others, illustrates a struggle in which the contest is, as it were, hand to hand. Plants may consume each other, animals all prey upon plants, and the carnivores upon other animals. A higher form of direct competition involves the struggle to remove others in order that desirable conditions may be monopolized. Perhaps the highest form of competition is again indirect, involving not competition in consumption but rather in social recognition. Here the endeavor is to gain a social reward through social service or conformity to social ideals.

Competition a source of security. Adaptations that it requires

The multiplication of living beings makes life itself more secure, but at the same time renders the problem of life for the individual more complex and variable. To meet these conditions new adjustments arise, and these are particularly in evidence among orders that engage in either direct competition or struggle for social recognition. Muscular strength and swiftness and keenness of sense gain enormously in value, and protective armor, teeth, claws, horns, cunning, evolve to contribute to effectiveness in the fierce struggle. Competition for social recognition involves the social instinct, and, as a rule, the higher intellectual powers which are summed up in rationality.

Competition a continual readjustment to a readjusting rival

The struggle with living beings not only involves an extraordinary array of special adaptations, but the problem of readjustment comes especially in evidence. In the contest with inorganic nature the organism encounters an adversary that is all-powerful but at the same time blind and mechanically uniform. The living rival, however, is continually changing his tactics to meet the successful inventions of his enemy. In competition the animal is compelled continually to readjust himself to conditions the variability of which is a function of his own power of readjustment. He has to learn to meet, not only the present methods of his adversary, but also the methods by which this antagonist will counter his new devices. He must take account of and strive to fathom that environment of mind that to the living being which is concerned only with physical nature is non-existent, an environment the variations of which are dependent upon conditions so capricious that the indeterminists have declared them to obey no uniform law, and hence to be beyond the ken of foresight.

Powers involved in coöperation

But competition alone without cöoperation can scarcely be said to introduce the animal into the inner depths of that psychical or social environment that lies about him. Cooperation is the true revealer of mind to mind; or rather, the régime of coöperation in its higher phases is impossible without such revelation, and so without the social and moral instincts and the intelligence that lifts man above the brutes. Cooperation has its lower levels, in which it is a result of mere blind instinct, and in these phases it antedates the higher forms of competition. Indeed, group competition and competition for social recognition depend on coöperation. But on its higher levels coöperation involves more than such knowledge of the activities of mind as enables one to destroy another. In such a contest strength and good fortune are often more effective than wit, and wit itself is of that low order that

contents itself with "treasons and stratagems." Intelligent coöperation means such mental and moral power as enables one mind to influence another, to control it, to reduce it to subservience, or to inspire it to independence, to govern, to exploit, to educate, to uplift.

Especial variability of the conditions of cooperation

If to a rival the problem of struggle is one of continual readjustment to one who is himself readjusting, this factor of fathoming and dealing with the variable becomes more in evidence when an attempt is made to reach those mainsprings of human action that must be touched to bring about coöperation. To be a companion, a benefactor, a ruler, or a teacher demands a comprehension of human attitudes, ideas, and motives, a knowledge of the laws of human nature that is exhaustless. Hence, the one who coöperates must perpetually learn. He is striving to determine the nature of a mind and will, which because it is a living mind and will is itself continually active, growing and determining in new ways both itself and others.

Security of the environment of cöoperation

The social environment brings with it a security that amply repays the struggle to preserve adjustment to it, to learn its variable ways. From parental fosterage to military protection, and on to the law, order, education, and philanthropy of civilization a steady advance has been made in rendering the resources of the individual identical with those of the group or of humanity. Society is a mutual insurance company against the uncertainties of the struggle with the elements or with hostile life. Moreover, just as the vital conditions for the animal are more specialized than for the plant, and as through any deficiency it may more quickly be brought to ruin, so the demands of those functions that enable us to dwell in social coöperation are more delicate and more exacting than are the requirements of life in contact merely with physical nature. For society means the interest of all in the welfare

New wants as the price of society

of each and the dependence of each on the good will of all. Hence one's needs are no longer limited to food and drink and other physical wants, but include the welfare of one's fellows and their approval. The instabilities of life in society are due far more to the unhappiness of injured sympathies or to the sense of social failure than to the lack of the actual physical necessities of life.

The highest function that of creating environments

(4) *Natural* versus *artificial environments.* — Of all the functions, that one which addresses itself most directly to the task of providing secure conditions of life is the power of creating an artificial environment. By an artificial environment is meant those provisions by which a living being assures for himself the conditions of life when these would not be provided by nature. Food is stored, shelter is provided against the weather and living enemies. There is doubtless a natural evolution from fat and fur to granary and clothing. With the latter we have really come to what we may call an artificial environment. From simply storing what nature gives in excess in her moments of bounty, we come to control and develop her powers of production and to elaborate these products. The use of fire, weapons, tools, domestic animals, capital, institutions of society from the court of justice to the public school, — all these are illustrations of the ways and means by which man comes to substitute for the uncertainties of climate and soil, for the caprice of fortune and the injustice of his fellows, an artificial condition that means comparative uniformity, security, fair play, mercy, and finally more constant and rapid progress toward better conditions.

Security of the artificial environment

Provision for the future as adjustment to variability itself

The artificial environment consists of that which is created to-day to be utilized to-morrow. It is the environment of anticipation and provision. In producing it the animal is adjusting himself, not to the present emergency, but rather to one as yet in the future. But if the adjustment to present

emergencies demands constant learning and relearning, what should we say about the efforts that are aimed to meet the situations of hidden time to come? When we enter that land of mystery, our activities take on the character of mere preparations to readjust, — tentative, uncertain steps taken partly to test the character of the ground, partly in the hope that it may prove firm and our effort be not lost. Our products are mere conjectures, hypotheses, surrounded by the atmosphere of doubt, interpenetrated with the uncertainty that overcomes us when we come to realize to how small a degree the gift of prophecy is ours. We pile up alternative securities that we may have abundant resources to fall back upon when some fail. In adjusting ourselves to the future we are in a very real sense endeavoring to cope, not with this or that varying thing, but with variability itself.

Functions that deal with the variable

The principal adaptations by which the individual is enabled to create and master an artificial environment are intelligence and persistence. The instincts of prevision expand into the conscious foresight of man. Reasoning Professor James has defined as the "power of dealing with novel data." Useful in all higher environments, since variability is so universal a characteristic of them, it, together with the moral perseverance which is necessary to render it effective, constitutes the one thing needful in constructing that artificial condition the essence of which is its adaptation to futurity and variability. Reasoning endeavors to seize these fundamental laws of experience in terms of which all variation can be expressed, to accumulate resources by which the situations indicated by these laws can be satisfactorily controlled, and so to train the individual that these resources will be utilized when needed. Intelligence finds its primary function in readjustment, and in this power, therefore, capacity for education finds its highest expression.

Summary

Surveying briefly the results of the preceding analysis, we note the one striking fact of the increase in environmental variability as we go from lower to higher environments. A regional environment necessarily takes on the character of surroundings consisting of the symbols of sense. These symbols are indefinite in number, and constantly change their significance as circumstances change. The social environment is variable with what to the onlooker seems like the indeterminateness of the will. The artificial environment is of the essence of provision against the chance and change of the future. The evolution of functions to meet these higher conditions must, therefore, be a process of perfecting the methods of readjustment. The evolution of life may from this point of view not improperly be called the development of capacity for education. Thus education is not only a factor in evolution, but an important aspect of its goal.

Section 5. *The evolution of wants*

The evolution of wants a stimulus to readjustment

We have seen that readjustment means the development of new powers in the organism in order that it may more satisfactorily gratify in the given environment the wants of its nature. The stimulus to growth is dissatisfaction, and this may result either from environmental variations, which render the old methods incapable of attaining to old satisfactions, or from the evolution of new wants within the organism itself, which make it discontented with results hitherto regarded as satisfactory. We have spoken of environmental variability as the primary stimulus to growth. The evolution of wants may for the present be regarded as a secondary stimulus to such activity.

Law of the inertia of growth

It will be noted that, since wants spring from within, their evolution is a process of growth. Thus growth itself produces

wants which stimulate further growth. This principle may be called the inertia of growth. We have stated it more abstractly as follows: *the process of growth brings about changes in the organism that themselves tend to throw it out of gear with its life conditions.*[1]

Illustrations of this law in (1) increase in size,

The inertia of growth finds one of its simplest illustrations in the supposed cause of the fission of the amœba. Spencer[2] called attention to the fact that, since the amœba absorbs food through the surface of its body, the amount that it can take in will depend upon the extent of that surface. On the other hand, the amount that it needs depends on its volume. Since by a simple geometrical principle volume in similar solids increases faster than surface, the growing amœba, like population under the law of Malthus, is continually tending to outgrow its powers of nourishing itself. Thus it inevitably comes to a crisis in which the only salvation is a revolutionary restoration of an earlier status, which is accomplished by simply splitting itself in two.

(2) changes in composition or structure,

It is probable that the amœba here illustrates a comparatively universal physiological principle. The power of sustentation tends to increase its burdens until it can support them only with extreme difficulty, if at all. There are other physiological illustrations of the inertia of growth. Not only in the general increase in size on the part of the individual or the species, but also in the chemical and structural changes that go on in various parts of the body, do we see the tendency for growth to continue beyond the point of perfect adjustment. For example, the change of cartilage into bony tissue, by which the skeleton of the child gradually becomes capable of supporting and protecting the body of the man, depends on a chemical change in the constituents of the bones which continues until in old age it renders them brittle and fragile.

[1] See p. 31.

[2] *Principles of Biology.*

Professor Minot says of this transformation that it offers a "clear illustration of a principle of change in the very old which is, I take it, perhaps sufficiently well expressed by saying that the change which is natural in the younger stage is in the old carried to excess."[1] The same writer maintains[2] that the processes of growth involve the differentiation or the development of special characteristics in the cytoplasm of the cells, a change that brings about a loss of the power of multiplication that originally belonged to the cells, and without which the losses by decay and death in the differentiated cells cannot be made good. The inevitable result is senescence and death. Thus growth toward adjustment through differentiation continues until it brings about a need for readjustment through rejuvenation, and a consequent initiation of a new cycle of differentiation in a new generation.

(3) specialized growth in habit forming,

From the point of view of education, a most important example of the inertia of growth is found in the physiology of habit. Habit depends on the establishment of special pathways of discharge through the nervous system. These pathways are formed through the approximation or synapsis of the delicate nerve endings in the central nervous system. A nervous discharge which was at first sent diffusely through many channels is in consequence conducted in the main through but one. The synapsis involves a special supply of nutrition, and this again involves the neglect, possibly the atrophy, of parts not selected and exercised. Thus growth of one part is fostered at the expense of others. To that which hath is given. But this specialized growth interferes with the power of readjustment in case a shifting of conditions should make the resuscitation and functioning of the atrophied parts desirable. More! it may continue leading certain parts more and more to monopolize the nutriment until other parts, the coöperation of

[1] *Age, Growth, and Death*, p. 22.

[2] Compare *Ibid.*, pp. 249–250.

which is essential to sustain the life processes, are no longer able to support the burden of their function, thus bringing about extreme instability, if not positive maladjustment, for the organism as a whole.

(4) psychic evolution, shown in the evolution of (*a*) wants of sense,

Perhaps for our purposes the most important illustration of the inertia of growth is found in functional, especially psychic evolution. It is a commonplace that the process of acquiring the ability to satisfy certain desires usually involves the creation of a number of new ones. To accumulate simply means to breed the desire to accumulate. The increase in wages of the workers brings with it an increase in their standards of living, and they remain as discontented as before. Education often fosters discontent, for it increases desires faster than it supplies the means of their satisfaction. These platitudes of experience find their universal expression in the evolution of consciousness. With the development of power of movement, as we have seen, the function of sentiency is born, or, at any rate, expands from the primitive irritability of unicellular forms of life into the variety and richness that is correlated with the appearance of the various specialized organs of sense. The symbols that appeal to sense become invested with all the interest that in simpler organisms is reserved for conditions immediately affecting the vital processes. Thus the animal becomes absorbed, not only in the destruction or the building up of its body, but in whatever threatens the one or promises the other. Its wants have expanded to include an environment symbolic only of good. It fears and hopes. Its safety is secured at the cost of becoming entangled in the world of meanings. Among these meanings are pleasure and pain themselves, which, as premonitory of welfare and danger, come into greater demand the more extensive the resources of the organism for warding off injury or attaining good may be. Thus life evolves from conditions

in which the struggle with a hostile environment is simple and passive and slow to forms in which it is alert to a multitude of significances and intensely disturbed by them in order that reaction may be speedy and effective. It is a well-known fact of experimental psychology that reaction time is in a measure a function of the painful or intense character of the stimulus or of the clearness with which this is discriminated.[1] Thus with the evolution of swifter activity we find that wants are not only multiplied, but become more sharp. They expand from unconscious vital impulses into definite pains and anxieties.

(*b*) wants of society,

The development of coöperation and society, of prevision and the artificial environment, involves the same increase in the complexity and, doubtless, in the intensity of our wants. The social individual must include in his desires the desires of society. Sympathy, mutual help, and morality involve a keen appreciation of the happiness and the misery, the welfare and the rights of others, and of our duties toward them. To be a social individual means to be incapable of contentment in the midst of the discontent of our fellows, no matter how satisfactory our adjustments are from the physical point of view. Christianity has conceived its leader as one whose interests were as wide as humanity, and hence a "Man of Sorrows."

(*c*) wants of intelligence

So, too, he who labors now to create conditions to be utilized in the future becomes by his foresight interested in a universe that for him who is absorbed only in satisfying his immediate needs cannot be said to exist. One who "looks before and after" is one whose "sincerest laughter" is "fraught with pain." The want that creates care comes with the intelligence that strives to fathom and forestall the future.

In a sense the higher environments with their complexity

[1] Compare Henmon, *The Time of Perception as a Measure of Differences in Sensation.*

Higher environments the product of higher functions

and variability and consequent demand upon our powers of readjustment are merely the product of the higher functions, the evolution of which is the result of the inner growth of the organism. The sense world cannot exist to the creature unendowed with senses, nor society to an organism without the instincts and the intelligence that enable the apprehension of other minds. The world of the future is a living reality only to those capable of prophecy. Nature to the amœba is indeed a poor affair, but the man does not find himself in an environment that differs from that of the amœba, except through his own increased power of apprehending it. Thus the functions and the corresponding wants summon the higher environments into reality, at least the only reality that is of any importance to the organism.

Unforeseen results of functional evolution

But when the function has once called forth the new world, it finds this creation infused with a spirit of independence, intractable, variable with its own caprice, a veritable Frankenstein. Thus, although with the idealist or the pragmatist we may regard the world of reality as an expression of mind or will, it is evident that when we come to cope with this universe, we are compelled with the realist to will or think it to be what it is. It is and remains a problem, a challenge to readjustment, even though it sprang into being because of the rise of powers, the immediate purpose of which was to effect adjustment to lower conditions of life.

Environmental variability may be characterized as the unexpectedness of the emergencies of life. The inertia of growth is merely a name for the same thing when we look at it from the point of view of the outcome of any effort toward adjustment. The conditions of growth are vaster than the immediate purpose of the grower. Hence growth does not cease when its immediate results are gained. The environment is not summed up in the definite situation which can be met by

definite attainable methods. Hence it is exhaustless in its demands upon readjustment. But although we may agree that in the last analysis the inner and outer stimuli to growth are interdependent and in effect the same, it is not important to insist upon their identity in discussing the methods of readjustment or the concrete problems of education. Apparently the change in wants and functions and the change in external conditions of life are distinct and independent, and we shall not gain in treating our subject by thinking of them otherwise.

Summary

In conclusion, we may say that the occasion for growth or readjustment may be, not merely variation in the environment, but also changes incidental to the process of readjustment itself. These changes we sum up under the title, *inertia of growth.* They include the increased burdens entailed by general growth, the dangers incidental to prolonged chemical changes, at first useful or indispensable, the loss of power involved in differentiation of function and the formation of habit with consequent inability to repair loss, to readjust, to preserve the balance in vital activities, and finally the development with the evolution of new functions of new wants which involve intenser activities of readjustment than were necessary before. Thus not only from the point of view of the environment, but also from that of the inner activity of the organism itself, readjustment makes necessary more readjustment, evolution creates a tendency to faster evolution, education intensifies the need to learn. As the need for readjustment increases its methods change, and we shall now discuss forms that they assume.

Section 6. *Types of readjustment*

Two methods of readjustment

We have defined education as a process of readjustment, and have endeavored to set forth the conditions of such a process. But although education is readjustment, it is not of

necessity true that all readjustment may be called a process of education. Strictly speaking, education is only one of the forms which readjustment takes. In the course of evolution another form has appeared to strengthen the resources that have enabled this function to cope with the more and more difficult problems that it has been compelled to face.

(1) Education as continuous individual readjustment

In the first place, it is evident that education is always a process of individual development. We might speak of racial readjustment, which in contrast to this goes on by the process of natural selection, operating upon variations which do not arise because of education, but are present at the beginning of the life of the individual. Again, education is a more or less continuous process of growth in the individual. Occasionally, however, we note that readjustment is accomplished by a discontinuous process. Life persists, but there is a sudden and revolutionary change in its form. This change is called reproduction, which is frequently characterized as discontinuous growth. Part of the body of the parent is, as it were, set aside, and begins life on its own account as a distinct individual. This change is frequently accompanied by the death of the parent. In any event, the life cycle of the offspring normally continues for a considerable period after its progenitor has perished.

(2) Reproduction as discontinuous racial readjustment

Now as continuous growth is normally a process of readjustment, we might assume the same of discontinuous growth. Thus Geddes and Thompson declare: —

"Le Conte and others have pointed out that reproduction really begins with the almost mechanical breakage of a unit mass of living matter, which has grown too large for successful coördination. Reproduction, in fact, begins with rupture. Large cells, beginning to die, save their lives by sacrifice. Reproduction is literally a life-saving against the approach of death. Whether it be the almost random rupture of one

of the more primitive forms such as Schizogenes, or the overflow and separation of multiple buds as in Arcella, or the dissolution of a few of the infusorians, an organism, which is becoming exhausted, saves itself, and multiplies in reproducing. In some cases, reproduction is effected by outflowing processes of the cell which have gone a little too far. Now, such primitive forms of multiplication, gradually becoming more definite, express a predominant katabolism in the unit mass. Reproduction in its simplest forms is associated with a katabolic crisis." [1]

Reproduction occurs at a katabolic crisis

According to this view, then, reproduction occurs at a crisis when readjustment is necessary, and through it an effective adaptation is secured. Let us examine a little more carefully both the character of the crisis which reproduction alone can meet, and the methods by which it brings about readjustment.

Reproduction is "associated with a katabolic crisis." Predominance of destructive over constructive processes, when this becomes threatening or critical, forces this revolutionary change in form. However, ordinary continuous growth is, as we have seen, occasioned by some lack of adjustment between the wants and the supply. Katabolism is going on. The loss must be replaced, and with this replacement must come, if the organism be growing, some movement in the direction of greater efficiency in supplying the needs that waste or any other indispensable activity of life creates. But it is the crisis in katabolism that compels reproduction. Now a crisis must be a situation which the normal processes of continuous readjustment either aggravate or, at any rate, fail to help. Such a crisis we find may be brought about by revolutionary changes in the environment or by the inertia of growth or by both. In general, however, it is evident that the inertia of growth is usually in some way concerned in the difficulty,

Causes of the katabolic crisis

[1] *The Evolution of Sex*, Ch. XVII, § 2.

for it is in the inability of continuous growth to reverse itself, to change radically its direction or character, or even to cease to go on as it has, that makes impossible the readaptation when the extraordinary environmental change takes place.

The most important revolution in conditions of life that is concerned in forcing the katabolic crisis is seasonal change. Comparatively few organisms survive such change except through reproduction. On the other hand, increase in size, changes in the balance of parts or their chemical composition, or differentiation of structure, all are most fruitful sources of the critical situation. These forms of growth are all fostered by favorable environments, seasons of abundance. Thus we have the curious paradox that the katabolic crisis may result from very favorable conditions, through the promotion by them of processes of growth, the inertia of which carries the organism beyond the condition of perfect adjustment, or from very unfavorable conditions, where the needs of normal metabolism cannot be supplied. Indeed, both conditions conspire, for the more extensive the growth during the favorable season, the more unstable the condition of the organism to effect the adjustments necessary when the season of hardship appears.

Results of a katabolic crisis

When we turn to the character of the readjustments effected by reproduction, we find great variety. The katabolic crisis may bring about four alternative results: (1) the death of the organism; (2) the resolution of the total body of the parent into a number of smaller individuals; (3) the disruption of the body of the parent into parts, one of which dies, while the other continues to live as one or a number of individuals; (4) a similar disruption with a continuation of life on the part of the parent body for a certain period. In the three latter cases reproduction has effected readjustment, either (1) by putting the surviving parts of the parent body in a condition capable

Three advantageous results of reproduction

of meeting changed life conditions, or (2) by relieving the tension due to the inertia of growth, or (3) by giving rise to offspring in which the direction of growth can be changed into ways impossible for the parent form to enter. Indeed, all these advantages may accrue from a revolutionary change in form.

The first advantage may be gained from a mere reduction in size. The smaller organism may when food supply has become less abundant be able to sustain itself better than the larger one. This gain is illustrated in the fission of the amœba, and is one of the most general advantages of reproduction. Again the reproduced form may be protected by a cyst or other covering, within which the germ may lie with vital activities temporarily suspended, but at the same time shielded against hostile cold, or scarcity of food or water, or even the attacks of enemies. The encysted protozoon, the seed, the egg, the cocoon, the placental protection of the mammal are all illustrations of this form of adaptation; except that in the two latter cases we have abundant food supply and a continuance of vital activities.

The first advantage illustrated in (*a*) smaller size, (*b*) protected form,

The smaller size, the protected form, and the greater number of the offspring all contribute to effective dispersal of the species. Such dispersal may enable some of the new generation to find a more advantageous habitat than that of the parent. This is particularly important in the case of plants or sessile animals, for the detachment of the reproduced form enables it to be scattered broadcast. Thus the plant accomplishes through its seed what the animal does through movement. It readjusts itself through offspring that are not only protected so that life is preserved indefinitely even though conditions be severe, but are also in a form to be blown about by the winds or carried by water currents or by birds or other animals until some few encounter both the favoring season

(*c*) means of dispersal,

and other conditions more advantageous than those which surround the abandoned parent.

Dispersal may be favored by adaptations peculiar to the reproduced form. Thus the seed may be equipped with wing-like or downy structures to facilitate flight, or it may be surrounded with food, the main use of which is not to provide it with a store of nutriment when it starts life anew, but rather to attract the birds or other animals which devour the food but disperse the seed itself. The last stage in the metamorphosis of insects is usually a winged form, and in many cases this form is very short-lived, existing merely to insure the dispersal of the eggs that it lays.

(*d*) other adaptations

Other adaptations gained by the reproduced form may fit it especially for those life conditions in which its vital activities are likely to be resumed. Thus the larval form of insects is invariably especially adapted to nourish itself on the food that is practically certain to surround it when it hatches out from the egg. This adjustment of the newly born to its food conditions is practically universal. Moreover, the protective coloring, the means of defense, and the instincts of the new generation fit it as a rule especially to its environments.

The second advantage of reproduction as relief of organic tension

The second advantage gained through reproduction is that of relieving the tension due to the inertia of growth. As such tension is an universal characteristic of the katabolic crisis, its relief is an invariable result of any form of reproduction. Especially where the parent survives the birth of its young do we find this advantage representing the gain, in fact the sole gain, of the parent form. But whatever be the immediate occasion of the katabolic crisis, and whatever the gain through reproduction to the parent form, it is evident that the reproduced forms almost always possess special readjustments that give them at least ultimately a peculiar advantage over the parent in the struggle for existence.

Importance of the third advantage of reproduction, or rejuvenation

For the purpose of the theory of education the most important of these advantages is the third of those recounted above as resulting from reproduction. In the offspring the direction of growth may be changed into ways impossible for the parent form to enter. This change in the direction of growth is accomplished for the most part through rejuvenation. The part of the parent body that is segregated is as yet undifferentiated. It is replete with possibilities of growth that have not been utilized. In it, therefore, the direction of growth can be changed to meet whatever variations in emergencies the fortunes of life have brought.

Reproduction usually involves a degree of rejuvenation

It is probable that all reproduced forms are in a measure rejuvenated. Yet it is evident that in many the advantage of rejuvenation is slight as compared with the specific adaptation that is gained. The offspring are protected better, or are in a condition favorable for dispersal, or possess some special characteristic in reference to methods of nutrition, etc., that are not capacities to readjust but rather perfect adjustments. In respect to these advantages the offspring are as mature as the parent. They are not *young*. They are simply *new*. They are not rejuvenated but changed.

On the other hand, there are many forms in which rejuvenation is the great advantage of reproduction to the offspring. While protective adaptations may exist for them, the need for protection arises largely from the fact of youth, the weakness of immaturity, and not especially as an adjustment to seasonal or other environmental change. They are born as they are that the direction of growth may be changed into ways impossible for the parent form to enter. They begin again, and along different lines endeavor to meet the changes that cannot be successfully encountered along ancestral pathways.

Readjustments to determinate changes

It is plain that rejuvenation constitutes an essentially different method of readjustment through reproduction than do

the others we have considered. Being a different method, it is capable of coping with a different sort of a situation. Such readjustments as exist perfected in the offspring at birth can evidently be adaptations to such changes only as occur with regularity, and can therefore be, as it were, anticipated by the organism. Periodic changes, whether these are a result of seasonal rhythms or of those physiological rhythms that seem bound up with the inertia of growth, are the only sorts of variation that can be met by a form of readjustment that is specifically determined beforehand. Natural selection would favor and fix a type the nature of which is to reproduce such forms as are adapted to the changes that occur with regularity. Thus determinate forms of discontinuous growth become incorporated in the heredity of the species in order to adapt it to determinate periodicities.

Rejuvenation as readjustment to indeterminate changes

On the other hand, the specific value of rejuvenation lies in that it enables the organism to meet indeterminate, unperiodic changes. It restores a capacity for growth lost by the parent organism as a result of differentiation. The result is that the reproduced form may seek its adaptation in ways quite different from those developed in the parent, and in consequence it is in a better position to encounter situations that never before have confronted the species. Whenever the lines of growth that have become defined in the parent are inadequate to new emergencies, reproduction is necessary. Whenever these emergencies are of such a nature that they cannot be anticipated by the heredity of the species, the reproduced form can gain no advantage from any adaptation save a rejuvenation that is in some way associated with a restoration of its capacity for growth.

We are here not using the term, *rejuvenation*, as meaning the restoration of any earlier form of the organism, but rather as the restoration of an earlier capacity to become adjusted

That the stage represented by a reproduced form occurred earlier in the life of the parent does not mean that it is entitled to be called youthful. Reproductive adaptations to periodic changes involve revivals of earlier stages in the life of the individual, but in so far as these adjustments are adequate to the preservation of the life of the new-born, they are not indications of youth but of maturity. The earliest stage in the life history of an individual is, doubtless, as a rule the least differentiated and the most juvenile, yet there are many life histories in which this fact is not so much in evidence as are the specific adaptations by which the reproduced forms are able to maintain themselves independently of parental help. Hence the new-born are not of necessity youthful, and in many such forms rejuvenation is not apparent. It develops and becomes a striking characteristic of the early stage in the life of such organisms as dwell in the midst of variations so indeterminate that they cannot be anticipated in the hereditary tendencies of the species.

Rejuvenation especially important to the higher species

If we reflect on what has been said about the variability of the emergencies that higher orders of life are compelled to face, it is evident that with them adaptation through rejuvenation would become more and more necessary. The rhythmic changes of the seasons become less and less occasions for katabolic crises in the life of the individual. Migration, society, artificial conditions of life, all nullify their revolutionary effect. But these higher environments involve, as we have seen, not less but more variability. Moreover, this variability is increasingly indeterminate. Man can, indeed, say of his life that it is far more secure than is that of lower orders, but not that it is one in which he can predict the exact character of the emergencies of the morrow with anything like the same certainty. He wants so many more things, and his ways of getting them are so numerous and change with such rapidity

from generation to generation. It follows that with him, and, indeed, with all the higher orders, rejuvenation is the leading if not the sole advantage that is enjoyed by the reproduced form.

Variation as readjustment to indeterminate change

It may be objected that with the higher orders as well as the lower ones a very important gain from reproduction is found in the variations that new generations display. Among these may be found characters that render their possessors far better adapted to the existing conditions of life than were their ancestors. Thus reproduction can adjust to indeterminate change in other ways than by rejuvenation. On the other hand, it is evident that with the higher orders the variations that natural selection favors are more and more those associated with capacity to learn, intelligence. Now it is for the sake of this power especially that rejuvenation exists. It is hard to teach an old dog new tricks or for the skilled workman to survive changes in machinery, or for the newly rich to assume the habits of those who are "to the manner born," or for the old fogy to remain efficient when life takes on new issues and demands new methods. Wherever readjustment that conflicts with existing habits of thought and action is necessary, there some sort of rejuvenation is the only resource, and that comprehensive rejuvenation that comes with the birth of a new generation becomes most helpful.

Especial value of variation toward capacity to learn

Adaptation to determinate changes seen in life cycles of discontinuous growth

A comparison of life cycles of organisms for which reproduction yields definite adaptations with those of species where it is largely rejuvenation yields a striking contrast. A life cycle is a succession of stages in the life history of an individual or species, at the end of which the initial stage recurs and the cycle is again repeated. The resumption of the initial stage of the cycle is, of course, always by reproduction. But with species where reproduction finds its especial value in effecting determinate adjustment we may find an elaborate life cycle,

each transition in which is brought about by discontinuous growth. The two typical forms of such life cycle are metamorphosis and alternation of generations. Wherever one individual assumes in succession a number of forms apparently utterly distinct in appearance and mode of life, we have metamorphosis. Whenever at each transition the parent form gives rise to a number of individuals of the new form, we have alternation of generations.

(*a*) Alternation of generations an example

Alternation of generations occurs in nearly all species of plants and in very many species of animals. In the ordinary jellyfish we have as a first stage a sessile form, that grows under favorable conditions, finally giving off in succession a number of buds that become free-swimming jellyfish. These eventually produce offspring in the form of fertilized ova, that become attached to some object, and the series is again repeated. Such an alternation between free-swimming and sessile forms undoubtedly provides the best adjustment for the species. The sessile form is adapted to take advantage of abundant food supply in a certain locality. It grows until its powers of sustentation are taxed. Thereupon it buds, and the free-swimming forms thus given off can seek other environments removed from the competition of the parents, in this manner providing a wider range of food supply for themselves and insuring the dispersal of the species.

The liver fluke as illustrating alternation of generations

In the remarkable case of the liver fluke there may be distinguished seven stages in development through the life cycle, as follows: (1) Eggs in the alimentary canal of the sheep. These are expelled from the body. (2) From them are hatched minute ciliated organisms that may pass into the bodies of water snails as parasites. (3) Here they become encysted. (4) From each cyst a number of minute organisms called rediæ appear. These feed on the digestive organs of the snail. (5) They reproduce, and among the offspring are organisms

that pass out of the body of the water snail and swim about. (6) They leave the water and become encysted on blades of grass. These are eaten by sheep. (7) Being hatched out, they become parasites upon the liver of that animal. Here we have a most elaborate series of changes, the sum of which makes possible a very successful life history on the part of the species in question. We have primarily a set of adaptations that enable the substitution of one host for another, so that the species may survive the death of either, an event quite likely to happen because of the havoc wrought by the parasite itself. We have all the apparatus of encysted forms and of ciliate free-swimming forms that enables preservation in unfavorable conditions and dispersal. In short, we have well represented those devices by which successive, inevitable, and periodic crises in the life processes of an organism can be met.

(*b*) Metamorphosis as a life cycle of discontinuous growth

The more familiar life cycle of metamorphosis illustrates the same sort of readjustment. The egg, the larva, the cocoon, and the butterfly are as different as different species, yet they are all in a sense the same individual, which, as it were, reproduces itself, or suffers discontinuous growth at each crisis in its history. Indeed we might speak of the transformation as an alternation of generations where the reproduction is asexual and the offspring a single individual. Each stage in the metamorphosis illustrates a readjustment to conditions that can definitely be anticipated by heredity. The eggs are protected against unfavorable conditions, but as a rule are deposited where with the recurrence of spring the food supply will be good. The larva represents a stage well fitted for taking advantage of abundant food, favorable weather, etc. When, replete with nourishment, it finds the food supply growing scanty, it assumes the protected form of the cocoon, from thence to emerge as the imago, winged for flight to favorable places for the deposition of its eggs.

When we contrast with these transformations the life cycle of an organism where reproduction finds its principal function in rejuvenation, we note a marked difference. The characteristic stages in the life history of such a creature are infancy, maturity, and old age. Here each stage is not an adapted stage, for infancy is characterized by lack of differentiation or adaptation, by immaturity. Again, each stage is not a result of discontinuous growth, for maturity is the product of the continuous development that goes on during the period of infancy. In metamorphosis the specific experience of the individual in an earlier stage does not determine its characteristic structure or peculiarities when transformed. As in all cases of discontinuous growth, the nature of the reproduced form is determined by heredity, and the experience of the parent form counts only through the general effect of good or bad nourishment, presence or absence of diseased tissue, etc. Continuity from one stage to another in the development of the individual is, of course, an indispensable condition for readjustment to indeterminate changes through rejuvenation.

The life cycle of continuous growth as illustrating adaptation to indeterminate changes

To sum up the discussion of this section, we may say that although all education is readjustment, it is not true that all readjustment is, properly speaking, education, for frequently this result is accomplished by a process of discontinuous growth. Discontinuous growth is, unless we except the case of metamorphosis, identical with reproduction. It occurs at a katabolic crisis, or a period in the life of the organism when the destructive processes outrun those of building up, and the balance cannot be restored by continuous growth along prevailing lines. A katabolic crisis usually springs from the cooperation of revolutionary changes in the environment with the maladjustment due to the inertia of growth, although either one or the other cause may be the dominant factor. Reproduction may result in the relief of the tension in the parent

Summary

organism, thus insuring for it at least a temporary lease on life. The main advantage appears, however, in the reproduced forms, which are either readjusted forms or well suited to become so by continuous growth.

The specific readjustments effected by reproduction are seen in means of protection or of dispersal, in adaptation to food supply, etc. Such adjustments may occur in a periodic series, thus giving rise to a life cycle of discontinuous growth, such as is found in alternation of generations or metamorphosis. These cycles adapt to determinate periodic changes in environmental conditions or inner growth, and hence to crises that can be met by hereditary provision for specific forms of discontinuous growth. On the other hand, where the variations in the conditions of life occur in nonperiodic indeterminate ways, there the only advantage that can be gained by a reproduced form is that of rejuvenation, or the restoration of an earlier, less differentiated state in the life of the organism. From such a state a readjustment by continuous growth impossible for the parent form can be effected in the young.

The higher organisms live in environments relatively free from the revolutionary influence of specific periodic changes. Hence specific readjustment by reproduction, except by relief of tension in the parent organism, is not characteristic of them to any marked degree. So, too, they do not show much evidence of the life cycle of discontinuous growth. On the other hand, their environments are exceedingly and indeterminately variable. Hence it is important that they should possess much power of continuous growth, and at the same time show in their reproduced forms a corresponding degree of rejuvenation. Only by the former power can the organism secure adaptation to its conditions. Only by the latter provision can the species effect readjustment to conditions that cannot be met along the prevailing lines of continuous growth. The

higher organisms, therefore, possess a life cycle characterized by continuous growth, the first stage of which is that of infancy. In fine, having said at the conclusion of the two preceding sections that the higher environments are more variable and hence require of their inhabitants greater power of readjustment, we may now add that, since these variations grow increasingly indeterminate, the method of readjustment comes more and more to be through rejuvenation and education.

Section 7. *The theory of infancy*

The theory of infancy has come to be recognized as an integral part of the theory of education. It is probably just to say that this is due to the discussions of John Fiske and President Butler. The former says: —

Fiske on the meaning of infancy

"But this steady increase in intelligence, as our forefathers began to become human, carried with it a steady prolongation of infancy. As mental life became more complex and various, as the things to be learned kept ever multiplying, less and less could be done before birth, more and more must be left to be done in the earlier years of life. So instead of being born with a few capacities thoroughly organized, man came at last to be born with the germs of many complex capacities which were reserved to be unfolded and enhanced or checked and stifled by the incidents of personal experience in each individual. In this simple yet wonderful way there has been provided for man a long period during which his mind is plastic and malleable, and the length of the period has increased with civilization until it now covers nearly one third of our lives. It is not that our inherited tendencies and adaptations are not still the main thing. It is only that we have at last acquired great power to modify them by training so that progress may go on with ever increasing sureness and rapidity." [1]

[1] *Excursions of an Evolutionist*, pp. 315–316.

Fiske implies that infancy is a positive basis for learning

A careful reading of this extract will reveal some confusion in the mind of its author as to the specific function of infancy. It is assumed that its value lies in enabling us to learn *many* things, to become adapted to a very complex environment. Since heredity cannot give us such a complex adjustment in a perfected form, Mr. Fiske thinks, we are given hereditary tendencies to be "unfolded and enhanced or checked and stifled." Now, as a matter of fact, there is no reason to suppose that heredity cannot transmit in the greatest profusion special adjustments. The only bar to such provision lies in the fact that they might not be the right ones. Mr. Fiske vaguely recognizes this in suggesting that the hereditary tendencies are to be modified "by the incidents of personal experience in each individual," yet in giving the reason for this arrangement he emphasizes the number and variety of things to be learned, and not their variability from age to age. If it were not for this indeterminate variability, there is no reason why the organism should not be perfectly adapted at birth, and, indeed, we have seen that in such respects as can be specifically anticipated the reproduced form is usually better adjusted than the parent one.

Real value of infancy negative, consisting in removing obstructive adjustments

Since infancy means immaturity, its primary value lies not in what it enables us to do, but in what it permits us to avoid. Immaturity does not mean power to learn many things, nor even anything. It means merely the absence of that which will prevent learning many things. Infancy does not signify intelligence, for idiots can betray an immaturity from which they never escape. It is true that without the need of readjustment that helpless infancy especially involves, intelligence would have no utility and hence no opportunity by which it may be evoked into being. On the other hand, there is no contradiction between intelligence and a fairly mature adjustment. It is only when readjustment cannot be effected without a

revolutionary change in methods of thinking or acting that rejuvenation becomes valuable. In so far as readjustment can proceed continuously along the lines of earlier mental and motor growth the recurrence of the earlier, undifferentiated state is a positive loss. It is because intelligence and habit get into ways from which there is no exit when changed conditions demand further progress that infancy becomes desirable. It is possible to conceive of methods of thinking and doing so soundly selected, and of intelligence so comprehensively equipped, that there could be for them no radical change in emergencies. To a species thus endowed rejuvenation would have lost its utility.

Positive basis of power to learn lies in definite, though undeveloped structures and functions

If, then, infancy is a merely negative condition of power to learn, what are the positive grounds of this capacity? It is evident that they are not to be found in lack of differentiation, for this involves nothing beyond the negativity of immaturity. That vague term, *plasticity*, must imply some positive qualities, as well as that of being at present amorphous. Some light will be thrown upon the nature of these capacities for growth by considering the physiological mechanism that lies back of the fact of infancy. It will be seen that this mechanism is a curious combination of both differentiation and its absence, of the positive and definite structure and powers of maturity deprived of just that specific coördination and maturation which is necessary in order that they should function efficiently.

The development of the young partly protected from and partly exposed to educative influences

In general, infancy involves a wholesale rejuvenation of the tissues of the body. Beginning in very primitive forms, the cells grow, multiply, and differentiate until the mature form is attained. For the most part this process is controlled by heredity. In so far as it is useful for the species that this hereditary control should dominate, the rejuvenated form is ordinarily protected against such external influences as would modify or check its inherent method of development. On

the other hand, wherever it becomes desirable, in view of the likelihood of variations in conditions of life, that the organism should be able to develop forms and functions different from those of its ancestors, there exposure to external influences before the functions in question have become mature is not only permitted but provided for. Thus we find that such powers as are designed to be affected by education have their maturation deferred until after birth, or, perhaps, the mere hereditary tendencies of the organism can never without the coöperation of use and training bring these powers to a specifically useful state.

Infancy dependent on (1) the deferring of (*a*) instincts

Thus infancy involves on the one hand the deferred and on the other the imperfect instinct. By a deferred instinct is meant one the physiological foundations of which do not ripen until some time after the individual has begun life in contact with environmental conditions similar to those in which the instinct will function. In case such an instinct is necessary for mature adjustment, its deferring means the infancy of the organism. The most striking illustration of such deferring is that of the reproductive instinct. Although this instinct is not necessary to the preservation of the life of the individual, the fact that it is deferred exposes it to the culturing influence of surroundings, just as much as though its non-appearance involved a genuine infancy. Indeed, there are many phases of the life of adolescence, such as enhanced sympathy, sense of responsibility, etc., which are closely interwoven with the ripening of the mating instinct, and are, we may properly say, necessary to mature adjustment to the social life of man. In so far, then, the deferring of this instinct may be said to involve genuine infancy, as well as to permit the modifying influence of education.

and (*b*) instinctive acts

Very clear cases of infancy because of the deferring of the development of native powers may be found in the instinctive

acts. In the following discussions a distinction will be made between these and the instincts. The instincts are the functions of the organism considered from the point of view of the needs that they supply. Most lists of instincts are selected according to this conception, as the feeding instinct, the instinct of fear, of sociability, of acquisitiveness, of curiosity. On the other hand, the instinctive act is a complex of movements that constitutes an hereditarily preferred method of carrying out one or many instincts. Crying, for example, is an instinctive act, and it may be resorted to as a means of satisfying the instinct of hunger, that of fear, that of sociability, and, indeed, almost any instinct that appears during the period when this type of activity prevails. Just as one instinctive act may be utilized by many instincts, so one instinct may function by means of a variety of types of instinctive or habitual activity. Thus the instinct of fear may lead to a resort to the instinctive acts of crouching, lying still, or hiding, or that of flight, or in extreme cases, perhaps, that of desperate fighting.

Distinction between instincts and instinctive acts

Now the instinctive acts are fitted to the instincts to which they constitute hereditarily preferred expressions by coördinations in the nervous system. Those parts the tension of which involves the sense of want associated with the instinct are thus brought into connection with the muscles through which the instinctive act is performed. The maturation of the parts concerned in producing the tensions in question causes the corresponding instincts to emerge. The ripening of the nervous connections by which a certain group of movements is made to coördinate harmoniously to secure specific results means the maturation of an instinctive act, and this process ordinarily involves the association of the group of movements with one or more instincts, to which, in consequence, it constitutes a preferential response.

Physiological conditions of the maturation of instincts and instinctive acts

A good illustration of a deferred instinctive act is that of

Walking a deferred instinctive act

walking. Very early in its life the child moves its legs in ways anticipatory of the perfected coördination. Nevertheless, the actual perfection of the instinctive tendency is invariably delayed until the child is nearly a year old, and sometimes much longer. Usually the child learns to walk; that is, on the basis of an instinctive tendency as yet immature, it builds by experience certain habits that perfect the coördination. On the other hand, certain cases cited by Kirkpatrick [1] indicate that children, who through some peculiarity of mind or body have refused to attempt either to stand or walk until much beyond the usual age, may suddenly and without practice of any sort perform these acts in a comparatively mature fashion. It follows that walking is not, as would seem from most children, an imperfect instinctive act, — that is, one that cannot be perfected by heredity alone, — but rather one that is merely deferred.

Infancy dependent on (2) the imperfection of instincts and instinctive acts

But if the deferring of instincts or instinctive acts usually involves infancy until the hereditary tendencies have fully asserted themselves, even more does the lack of perfection in the instinctive tendency bring immaturity conspicuously before the attention. For a deferred instinctive act may appear about as soon as it is needed, thus leaving no marked gap of maladjustment, whereas an imperfect one necessarily involves a period of learning, when the individual cannot do what is needed, and is, in consequence, immature, infantile. Both instincts and instinctive acts may be looked upon as imperfect, although this quality is more in evidence in the latter. An instinct may be imperfect through lack of definition of its wants until these have gained direction through experiment and experience. The instinctive act may require further additions and reorganization by experimentation before it can function effectively.

[1] *Fundamentals of Child Study*, pp. 80–81.

A rich equipment of imperfect hereditary tendencies the basis of power to learn

When we compare the lower and higher animals, we note especially the imperfection of the instinctive equipment of the latter. So great is this that it is a commonplace to speak of man as having not instincts but reason. Professor James [1] has in his usual striking way pointed out both this error and its occasion by showing that man has not fewer but many more instincts than any other animal, but that these instincts are more vague, more imperfect, more likely to conflict with each other and to be modified or suppressed as a result of experience. Thus the immaturity involved in the human infant is brought about in such a way as to preserve all the specific forms of adjustment that are characteristic of the species. They remain as hereditary tendencies upon which the process of reconstruction can proceed, making such reorganizations as experience suggests. Here, then, we find the positive basis of power to learn.

The physiological mechanism by which the instinctive tendencies are utilized as material for readjustment is in the higher vertebrates that of inter-segmental nervous connections. Of these Professor Donaldson says: —

Inter-segmental continuity in central nerves

"Among the higher vertebrates the principal sense organs located exclusively in the head assume a greater relative importance, and the reactions of the entire organism become more and more subject to them. This depends upon the fact that the various centers distributed through the spinal cord become connected with the cells lying at the head end in such a manner as to be somewhat controlled by them. These connections are mediated by bundles of fibers, which, traversing as they do the length of the cord, disturb the segmental arrangement. Moreover, the great development of nerve elements in the cord at the regions where the nerves controlling the limbs are given off causes a very considerable enlargement, extending through a number of primitive segments. As a result of all these modifications, the primitive segmental character of the medullary tube is much obscured in man." [2]

[1] *Principles of Psychology*, Ch. XXIV. [2] *The Growth of the Brain*, p. 188.

Resulting power of readjusting reactions to stimuli

This inter-segmental continuity means that any given sense organ may rouse the activity of any group of muscles in the body. Thus if one response fails to meet the situation in a satisfactory way, another may be resorted to. Here we have readjustment by the use of another than the hereditarily preferred response when the latter fails. Moreover, the inter-segmental connections make possible a readier combination of movements of different parts of the body to effect a satisfactory adjustment. Finally and especially, since the senses, and particularly the higher senses, involve adjustment to stimuli the significance of which varies with time and circumstances, that welding together through the central nerves of different parts of the body by which these senses are put in control must be accompanied by some loss of preferential associations between stimuli and responses. Ability to readjust quickly means that certain connections can quickly be abandoned and others tried. As the development of central connections makes the nervous system more and more a unity, the inherent lines of connection lose more and more their tyranny of control.

Immaturity due to the diffusion of impulses

The concentration of nervous impulses along specific lines that lead to definitely adaptive action means maturity. The diffusion of these impulses means immaturity. The more variable the conditions the organism is adapted to meet, the greater must be the tendency for nervous impulses to be released from the domination of heredity in regard to the paths they pursue, and to diffuse readily into many paths. Complexity of nervous interconnections thus involves a sort of democratic equality among them, an initial equality which is replaced by such preferential arrangements as experience may determine. Thus we have the imperfect instinct in order that the ultimate adjustments of the individual may be more largely habits acquired by himself, and not so much the mere reduplication of the instinctive methods of his ancestors.

This primitive tendency toward diffusion becomes especially evident in man because of the enormous development in him of cerebral control. Quoting again from Professor Donaldson: —

Cerebral control in man

"The study of the lower vertebrates after injury to the different divisions of the central nervous system shows that in those forms in which cephalization is but little advanced the primary centers of the cranial nerves when alone present may assume a guiding control over the remainder of the system. It thus follows that a frog after loss of the cerebral hemispheres can still direct its jumping movements so as to avoid a visible obstacle in its path; in other words, impressions reach the central nervous system of such a frog through its eyes, and these impressions influence the reactions of the muscles of the hind legs despite the absence of the hemispheres. In man, on the other hand, the parts of the brain corresponding to the optic lobes of the frog do not represent a locality in which such connections are established, so that in him the hemispheres alone do the work which in the less specialized form may be performed by the lower centers. In this connection we naturally inquire how the cerebral hemispheres may have acquired in the higher vertebrates capabilities which belong to them in a less and less degree as we descend from man through the zoölogical scale. In the higher forms it appears that incoming impulses, instead of passing over in the primary centers to cells which discharge downwards, pass to a group of afferent central cells which carry impulses to the cortex, that with the reorganization of this second pathway the first becomes less possible, and thus the function is transferred, though the causes determining the growth of the central cells on which the change depends are still obscure." [1]

Cerebral control as a cause of diffusion of impulses and hence of infancy and of power to learn

However obscure the cause, the value of the change is apparent. For the cerebrum is the great center of universal interconnections between sense organs and muscles. Moreover, all these connections have to a great degree that initial equality which is the parent of diffusion, immaturity, and the

[1] *The Growth of the Brain*, pp. 254–255.

need and power of learning. The animal that controls his body almost entirely by his brain must, therefore, *learn* to control it. We know now that the wriggling of the child is due not so much to superabundant vitality, as to diffusion of nervous currents, lack of coördination. Hence its instinctive tendencies are vague and imperfect, and in so far as they are deferred they may be anticipated by habits that may not only modify them, but actually check them or prevent their appearance.[1]

Summary

To summarize this section, we note that the advantage of infancy lies not in that it enables adjustment to many things, but in that it paves the way for readjustment when conditions change radically, as they do in the higher environments. In itself infancy means immaturity, a negation, and as such it does not involve capacity to learn. This positive power is, however, dependent in great measure upon the physiological mechanism that has given rise to and prolonged infancy. The rejuvenation in the young of the higher species is not merely a return to an undifferentiated form. It is that plus an hereditary tendency that enables rapid development of mature adjustments like those of the parent. In so far as it is in general well that the young should be like the parent, the infant organism is usually protected, so that the hereditary tendency can alone determine its development. Whenever, on the other hand, it is likely that a change of adjustment will prove desirable in the young, there the individual is before or during the development of its hereditary tendencies exposed to environmental influences similar to those in which the mature being will function.

Thus both infancy and the capacity to learn result from a deferring of the instincts and the instinctive acts. But we have yet to describe the mechanism by which exposure to en-

[1] Compare James, *Principles of Psychology*, Ch. XXIV.

vironmental conditions can change the drift of the hereditary tendency. This is to be found in the higher organisms especially in the development of elaborate interconnections in the central nervous system and of an initial equality of permeability among lines of association. Thus there results an early diffusion of impulses and lack of coördination, but the ultimate outcome is preferential associations or adjustments that are due to experiment and experience rather than to heredity. The highest phase of this initial diffusion of impulses makes its appearance when we have cerebral control. Here the instinctive tendencies are not only deferred, but they cease to be capable without the control and guidance of experience of developing into mature adjustments. They are imperfect.

CHAPTER III

HEREDITY AND EDUCATION

SECTION 8. *Differentiation of heredity and education*

Race adaptation permanent, individual adaptation temporary

THE discussions of the preceding chapter may all be summarized in the conception of race adaptation. The individual, unless we except some of the simplest forms of life, is only temporarily adjusted so that it can maintain its life. Nature seems to have abandoned the problem of effecting readjustments to variable environments by continuous growth, and in resorting to discontinuous growth to have substituted the adaptation of the race or the species for that of the individual. The man has only a temporary, a fleeting adjustment, the race has one that is comparatively permanent, perhaps eternal.

Heredity the source of racial continuity

Racial adjustment is made by means of a mechanism that preserves continuity through the discontinuity introduced by reproduction. The fundamental factor in the preservation of this uniformity is heredity. Heredity may be defined as the inherent tendency on the part of the reproduced form to resemble in structure and function its progenitors. This resemblance consists of three factors: the likeness between parent and reproduced form, the likeness between the offspring and an earlier stage in the life of the parent, and the inherent tendency on the part of the offspring to develop along the lines of growth of the parent. These resemblances exist to preserve continuity, wherever this is possible, and they may, therefore, be said to adapt the race and the individual to such life conditions as remain invariable age after age.

It adapts to the abiding

Education adapts to the temporary and is a source of discontinuity

On the other hand, as life advances into more and more variable environments its capacity for continuous growth increases. This is necessary because these higher variabilities are not periodic and capable of being specifically anticipated, but indeterminate and to be met only by a great variety of resources for readjustment. As the individual learns he uses up these resources and thus tends to disqualify himself for readjustments that involve a radical change from the habits already acquired. Hence the capacity to learn, which enables rapid and complex readjustment, leads the individual into perilous crises in case the adaptations thus gained are such as fit him to conditions that change in a revolutionary manner. It follows that capacity to learn on the part of the individual must, to insure race adaptation, be coupled with capacity for rejuvenation on the part of the race.

Hence, acquired characters should not be to any extent inherited

Race adaptation in indeterminately variable environments implies, therefore, a sharp separation between that which is inherited and that which is left to be acquired through individual experience. Heredity adjusts to the abiding and the periodic, education to that which cannot specifically be anticipated. The physiological mechanism by which this separation is effected is that of the isolation of the germ cells from the body cells, so that the former are, in great measure at least, protected against those influences that mold the body cells of the parent.[1] The result is that the offspring begin life with substantially the same inheritance as that with which the parents began. They do not to any appreciable extent display the influence of the life history of the progenitor. In the language of biology, acquired characteristics are not inherited.

Acquired characters plainly not inherited to a marked degree

It is not intended here to take a radical stand on this point. However, one does not need to be an expert biologist to see that with human beings very few if any acquired characters

[1] Compare Weismann, *The Germ Plasm.*

are inherited. The great mass of such traits, language, manners, methods of dress, occupations, — nay even morals and ideals, — must be relearned by each new generation with painful effort. The task of education seems like that of Sisyphus; no sooner is it accomplished for one generation than it must be resumed with a new one. The descendants of nobles very quickly assume the manners of the lowly born when hard conditions bring the children in close contact with humble companions. On the other hand, the marks of descent of a self-made generation do not remain to confute the aristocratic pretensions of their offspring.

The significant thing for a theory of education is that for the most part each new generation has to acquire anew the habits learned by its parents, — or different ones. It is of relatively small importance whether among this mass of acquisitions of a parent there may or may not be found a rare occasional trait that somehow gets ingrafted on the heredity of the stock, and is thus transmitted to the young by the mere fact of their being born. The evident fact that such traits are, to say the least, infrequent, means plainly that the race is better off without the ready embodiment in heredity of the manifold characteristics that a high degree of capacity for education enables the individual so quickly to assume.

Lack of attention to the value of the non-inheritance of acquired characters

The utility of the non-inheritance of acquired characters is a matter to which very little attention has been devoted among those who have discussed the facts. This has been due to a variety of reasons, perhaps the least important of which is that they may not have thought of it. A fundamental reason is, doubtless, the scientific sense, which is reluctant to explain the value of anything before it is definitely settled that this thing is a fact. Another important cause of the neglect of the value in question lies in the great emphasis that has naturally been thrown upon learning as the only intelligible ground of

variation. Thus it has seemed that the inheritance of acquired characters is so far from being undesirable that it is the only source of racial variation and progress. This difficulty will be considered later. Here we may note that a few scientists have attended to the positive evils that would spring from such inheritance.

Professor James says: —

James on the incompatibility of such inheritance with rationality

"In the mental world we certainly do not observe that the children of great travelers get their geography lessons with unusual ease, or that a baby whose ancestors have spoken German for thirty generations will, on that account, learn Italian any the less easily from his Italian nurse. But if the considerations we have been led to are true, they explain perfectly well why this law should not be verified in the human race, and why, therefore, in looking for evidence on the subject we should confine ourselves to the lower animals. In them fixed habit is the essential and characteristic law of nervous action. The brain grows to the exact modes in which it has been exercised, and the inheritance of these modes would have in it nothing surprising. But in man the negation of all fixed modes is the essential characteristic. He owes his whole preëminence as a reasoner, his whole human quality of intellect, we may say, to the facility with which a given mode of thought in him may suddenly be broken up into elements which recombine anew. Only at the price of inheriting no settled instinctive tendencies is he able to settle every novel case by the fresh discovery by his reason of novel principles. He is, *par excellence*, the *educable* animal. If then the law that habits are inherited were found exemplified in him, he would, in so far forth, fall short of his human perfections; and when we survey the human races, we actually do find that those which are most instinctive at the outset are those which on the whole are least educated in the end." [1]

Professor James, according to the view previously presented, errs in confining the value of non-inheritance of acquired

[1] *Principles of Psychology*, Vol. II, pp. 367–368.

characters to man. Wherever an organism dwells in an environment that varies in indeterminate ways, there the differentiation between those permanently useful adjustments that heredity may safely hand on, and those incidentally valuable ones that might prove a bar to readjustment, and may, in consequence, better be left to be acquired by the individual, should exist. The wider application of the principle is brought out by Mr. William Platt Ball.

Ball on the bad effects of use inheritance among brutes

"The effects of use, indeed, are generally beneficial up to a certain point; for natural selection has sanctioned or evolved organs which possess the property or potentiality of developing to the right extent under the stimulus of use or nourishment. But use inheritance would cumulatively alter this individual adaptability and would tend to fix the size of the organs by the average amount of ancestral use or disuse rather than by the actual requirements of the individual." [1]

Concrete cases of such possible ill effects of the inheritance of the effects of use are given in the following extract: —

"Use inheritance would crudely and undiscriminatingly proportion parts to actual work done — or rather to the varying nourishment and growth resulting from a multiplicity of causes, and this in its various details would often conflict most seriously with the real necessities of the case, such as occasional passive strength, or appropriate shape, lightness, and general adaptation. If its accumulated effects were not corrected by natural or sexual selection, horns and antler would disappear in favor of enlarged hoofs. The elephant's tusks would become smaller than his teeth. Man would have callosities for sitting on, like certain monkeys, and huge corns or hoofs for walking on. Bones would often be modified disastrously. Thus the condyle of the human jaw would become larger than the body of the jaw, because as the fulcrum of the lever it receives more pressure. Some organs (like the heart, which is always at work) would become inconveniently or unnecessarily large.

[1] *Are the Effects of Use Inherited?* pp. 132–133.

Other absolutely indispensable organs, which are comparatively passive or very seldom used, would dwindle until their ruin caused the weakness of the individual or the extinction of the species. *In eliminating various evil results of use inheritance natural selection would be eliminating use inheritance itself.*" [1]

When we turn to the case of humanity, Professor Ball finds these characteristic difficulties intensified.

Use inheritance especially detrimental to man

"It (use inheritance) is often mischievous as well as anomalous in its action. Under civilization with its division of labor, the various functions of mind and body are very unequally exercised. There is overwork or misuse of one part and disuse and neglect of others, leading to the partial breakdown or degeneration of various organs and to a general deterioration of health through the disturbed balance of the constitution. The brain, or rather particular parts of it, are often overstimulated, while the body is neglected. In many ways education and civilization foster nervousness and weakness, and undermine the rude natural health and spirits of the human animal. Alcohol, tobacco, tea, coffee, extra brain work, preservation of the weak, and many other causes help to undermine the modern constitution; so that the prospect of cumulative intensification of these evils by the additional influence of use inheritance is not an encouraging one." [2]

View that acquired characters are the variations that enable evolution

The utility of such a differentiation of heredity and education as makes inevitable little if any inheritance of acquired characters seems patent. On the other hand, the evolutionist is, as we have seen, confronted with the difficulty of accounting for the origin of the variations on the basis of which alone progress through natural selection is possible. To say that these were originally acquired characters seems like so easy a way out of this difficulty that many are loath to discard the possibility of such inheritance, and to return to the night of ignorance concerning the prime cause of evolution. Other explanations of the cause of variations seem simply to beg the question.

[1] *Are the Effects of Use Inherited?* pp. 128–129. [2] *Ibid.*, p. 151.

This alone has the merit of apparently affording a clear and definite cause, if, indeed, it prove a true one.

Variation must exist as a basis for the power to learn new things

However, a little reflection on the nature of the process of learning or acquiring characters may serve to dispel the notion that this is so simple and fundamental an affair that it would, if we only could use it, afford a lucid explanation of the origin of new characters. In fact, the process of learning is not a process of creating new powers or traits. On the contrary, it is simply a process of selection. One can learn only as he has the capacity to learn, and a capacity to learn is positive and definite, a true character, without which the so-called acquiring of characters cannot go on. Paradoxical as it may sound, we can acquire only what we in a sense already possess. We can learn to do only that which we can do, and learning consists simply and literally in selecting from among our potentialities those which are best fitted to achieve successful results in the various situations of life.

As this proposition will in the succeeding discussions be repeatedly taken up in order that from a new point of view it may be explained, amplified, and defended, it will be uneconomical here to enlarge upon it. We may, however, note two things. In the first place, the conception in question is merely an application of a principle laid down in *section* 3, that growth is the development of inner powers under the stimulus of a lack of adjustment to the conditions of life. The environment does not explain, nor even suggest the processes by which an organism becomes adapted to it. It merely stimulates these processes and determines which shall survive. Second, since the process of learning is itself founded on capacity for variation, to ascribe the origin of variations to the acquisitions of the individual is to beg the question only a little more subtly than when one attributes them to chance.

In the last analysis, perhaps, it will prove necessary simply

to assume on the part of life an inevitable tendency to vary, to develop hidden potentialities, to display the unexpected. Given this tendency, three conceptions have been formulated as to the manner in which it reveals itself. These have been called the theory of chance variations, that of orthogenesis, and that of heterogenesis.[1]

Inherent nature of the tendency to vary

Three conceptions of its character

The theory of chance variations regards the tendency to vary as displaying itself in slight departures on the part of the offspring from the norm of the parent. Slight differences in form, size, proportion of parts, composition of tissue, etc., appear and may be ranged around a medium type. With respect to any single character the number displaying a certain variation will be in a general way inversely proportional to the extent of this variation from the normal. Thus we have Galton's curve of distribution.[2] There will be very few very tall or very short men, more who are moderately tall or short, and most who are about the average height.

In order that slight variations may lead to evolution we must have the coöperation of some form of selection. Of this there are many types, notable among which are the demonstrably existent natural and artificial selection, and the hypothetical sexual, germinal, and organic selection. Of all these agencies natural selection is the one which must be relied on most to account for the origin of species; and right here arises a difficulty. It is hard to see that the slight chance variations from the norm of the parents which can everywhere be found in the offspring would be sufficient to assure the possessors of any of them an advantage in the struggle for existence such as would insure their survival when others perish. Unless some slight variations possess this survival value there would be

Evolution by chance variation, and its difficulty

[1] For an admirable presentation of these views consult Kellogg, *Darwinism To-day*.

[2] Compare *Natural Inheritance*.

no tendency for them to accumulate under the influence of selection until they really could produce a radical change in the character of a species.

Organic selection as giving survival value to slight variations

An ingenious hypothesis to assist in surmounting this difficulty is that of organic selection, suggested by Professors Baldwin[1] and Osborn in America and Lloyd Morgan in England. According to this theory, slight variations, which in themselves would have no survival value, may, if they are possessed by an organism that has at the same time considerable power of accommodation or learning, be developed through culture until they actually are of great service. The survival of such accommodating organisms would insure the survival of the traits upon which the process of readjustment is founded. Any variation in succeeding generations toward rendering these traits more pronounced would make the process of accommodation through them more sure, more swift, and more easy. Such variation would therefore have selection value, and might ultimately so develop the trait that it would function advantageously without any assistance from accommodation.

Organic selection as disintegrating and building up instinctive acts

Professor Groos[2] has called attention to the possibility that the power to learn might, instead of favoring the accumulation of variations in the direction of perfecting an instinctive act, operate in just the other way. By rendering it unnecessary for the organism to possess perfect hereditary adjustments, the capacity to learn permits and, indeed, encourages the disintegration of perfect instinctive acts in order to favor the power to readjust. Baldwin recognizes this point, and meets it by showing how the power to learn, which manifests itself especially in the form of imitativeness, might lead to the gradual perfecting of certain instinctive acts and the disintegration and plasticity of others.

[1] Compare *Development and Evolution.*
[2] Compare *The Play of Animals.*

"If an imperfect instinct is in the way of developing for a marked utility, imitation, by supplementing it, would undoubtedly aid its survival and evolution (to a perfected form). Yet, on the other hand, if an instinct is in process of decay, — or if the conditions make its decay desirable, — Professor Groos's principle would then come into operation."[1]

The special condition under which we might expect a perfect instinctive act to decay would unquestionably be the development of an indeterminate environmental variability, such as would make it desirable for each individual to begin life with tendencies to be perfected as circumstances suggest, rather than with fixed adjustments that are either unmodifiable or to be changed only with difficulty. The higher environments, involving many new, complex, and variable conditions, would logically favor such a change, and progress into them would bring with it decay of perfect instincts and instinctive acts. Practically this is accomplished by the development of cerebral control, — which has already been discussed,[2] — and the corresponding loss of inherited preferential connections. This change makes it possible to utilize any simple reaction wherever it may prove useful, and thus to establish new habits and new organizations of habits.

Higher environments as favoring the disintegration of instinctive acts

It is likely that this tendency is rather more common in the higher reaches of evolution than is that of the fostering of variations by the power of accommodation until they may accumulate into perfect instinctive acts. However this may be, it is evident that the latter sort of organic selection would suit only conditions where new environmental factors possess a stability that makes a fixed adjustment to them a continuously valuable asset. In that event, the insecurity of the immature condition and the wear and tear of learning would both be minimized by the transformation of such slight variations as

[1] *Development and Evolution*, p. 29.

[2] Compare § 7.

are useful only when supplemented by accommodation into the perfect forms of adjustment that function in a fairly adequate way without any intervention on the part of culture. Thus selection would tend to favor variation in the direction of perfecting the instinctive tendencies.

The operation of organic selection would, therefore, follow the general principle that heredity adapts to the permanent and education to the transitory. Wherever in the course of evolution new environments present abiding factors, there heredity advances to perfect an adjustment. Whenever, on the other hand, transitory conditions are to be met, there education is furnished with an initial capital of imperfect, plastic, alternative tendencies, and left to complete the work of readjustment. Inasmuch as organic selection is based on power of accommodation, and this in turn finds its use in conditions of indeterminate variability, we might expect that such selection would tend to promote those variations that are useful to education, and thus to bring about the disintegration rather than the perfecting of instincts.

Orthogenesis and heterogenesis can effect progress without selection

The advantage of the conceptions of orthogenesis and of heterogenesis over that of chance variation lies in the fact that they do not need, at least to such a degree, the support of some form of selection in order to explain evolution. Orthogenesis means a tendency to vary in the direction of useful functions rather than merely at random. Heterogenesis signifies a tendency toward radical change such as would bring about very suddenly entirely new varieties. If there be orthogenesis, selection is unnecessary to account for the origin of new species, for the inherent tendency to vary is self-directed toward the evolution of new and better forms of adaptation. If there be heterogenesis, selection might destroy those sports that are ill adapted, but it would be unnecessary to account for either the origin or the preservation of the type of those that can

live. The inherent tendency to vary displays itself occasionally in the rise of a new type that breeds true.

Combination of the forms of variation as likely

It is not at all unlikely that the tendency to vary takes all three forms. There is much random variation, which selection converts into new and better adaptations. Again, the variation may, from the beginning, have tended rather toward the better than the worse; or it may have come to do so because the tendency to variation in an orthogenetic manner has a survival value and other tendencies have been eliminated by natural selection. Finally, extraordinary forms do occasionally appear; variation sometimes proceeds by leaps, and among the new creations thus arising there may well be some that are even better adapted than the parent forms.

Sex as promoting all types of variation

The effect of sex may be expected to strengthen all these tendencies. By mixing strains of heredity it would, as has generally been supposed,[1] increase the amount of variation. Where conditions remain stable for a long period, there efficient type forms would, by continual elimination of weaker variants, become practically universal and uniform. Here the tendency toward slight variations might well be orthogenetic. Inbreeding seems to strengthen dominant characters. Thus since the dominant traits are those securing adjustment, variation that tends especially in their direction might properly be regarded as orthogenetic, — at least until by what might be called a sort of racial inertia of growth the point of most advantageous adjustment is passed. On the other hand, where conditions are revolutionized, there selection, by favoring rapid change, would destroy the dominance of the older adjustments in behalf of the variants, and the mixture of heredity in variant types would rapidly create conditions of heterogenesis.

In résumé, we may say that for any organisms that in-

[1] Compare Weismann, *Essays on Heredity*.

Summary

habit indeterminately variable environments education becomes differentiated from heredity as the agency by which adaptation to the changing conditions is brought about. This involves the non-inheritance of acquired characters, a result which is attained by the segregation of the germ plasm from the body plasm. Thus heredity everywhere comes to adapt to the abiding, while education is left to deal with the transitory. Many biologists are loath to admit the non-inheritance of acquired characters, in spite of its evident utility, because only thus, they think, can we account for the variations through which evolution is made possible. They fail to note that the process of education itself is one of selecting from among the potentialities of the individual those best suited to the conditions of life. Hence it must assume the existence in the individual of a power to vary or of variations. It is just as difficult to account for the variations that make education possible as it is to explain those through which heredity is improved. It is necessary to assume an inherent tendency on the part of living things to vary. Three theories exist as to the character of these variations: one, that of slight chance variations; a second, that of a tendency to vary toward the better, or orthogenesis; and a third, that of an occasional tendency to vary greatly so as to produce immediately what are practically new varieties. All three types of variation probably exist. Chance variation can produce no evolution unless supported by selection. The forms of selection especially important are natural and organic selection. The latter enhances the survival value of small variations by using them as a basis for accommodations. It thus enables them to accumulate into perfect instinctive acts or to bring about the disintegration of such acts into imperfect instinctive acts, as the exigencies of the times make it advantageous to trust these characters more to heredity or more to education. Finally,

under the influence of sex, orthogenesis would be more apt to prevail in times of stability, whereas heterogenesis would appear in revolutionary epochs, bringing into existence in these crises such changes as may alone be adequate to insure survival.

Section 9. *Heredity as a basis for education*

Hereditary character of power to learn

We have seen that capacity to learn is a positive rather than a negative thing. In the old, this capacity may be exhausted. In the young, it is restored by rejuvenation. It is part of their hereditary equipment because it is an invariably useful provision, more or less adequate, from the resources of which they are to find the material for their specific adjustments or else fail and perish. This capacity for education is probably found to some extent in all living beings. Professor Jennings says of the infusoria: —

Universality of this power among animals

"The same individual does not always behave in the same way under the same external conditions, but the behavior depends upon the physiological condition of the animal. The reaction to any given stimulus is modified by the past experience of the animal, and the modifications are regulatory, not haphazard in character. The phenomena are thus similar to those shown in the learning of higher organisms, save that the modifications depend upon less complex conditions and last a shorter time."[1]

The same statements were shown by Professor Jennings to apply to the amœba.[2] His evidence seems to indicate somewhat conclusively that animals at least can all learn. In general, this power seems to involve the ability on the part of the organism to change its customary reaction to a certain stimulus under the guidance of experimentation. Such accommodation in turn involves a sensitivity to the success or failure of

[1] *Behavior of the Lower Organisms*, p. 179. [2] *Ibid.*, pp. 24–25.

Factors in learning

reactions, and a capacity under the feeling of failure to resort to a different response. For the sake of clearness in treatment the factors in this process may be analyzed into four: (1) the instincts or wants of the organism; (2) its action system, or equipment of resources by the use of which it can meet these needs; (3) a sensitivity that takes account of the existence of lack of adjustment, and both inhibits such responses as prove unsuccessful and stimulates experimentation in the direction of other ones; (4) a physiological arrangement whereby a ready utilization of the resources of the action system may be brought about under the stimulus of dissatisfaction, and new associations of stimuli and responses quickly made strong under the influence of the opposite feeling.

Function in learning of the instincts and the action system

The first two of these factors do not of themselves imply any power of learning. However, they furnish the materials upon which the operation of the last two depends. Hence the number of its instincts and the extent of the resources of its action system determines directly the versatility of the learning organism. We have already defined the instincts as the functions or wants of the organism,[1] and have shown how each may become effective through a variety of instinctive acts, just as any instinctive act may be used to satisfy many instincts. Upon the number and variety of the instincts will, of course, depend the range of situations which may call for readjustment. On the other hand, upon the number and variety of the elements in the action system will depend the richness of the resources for readjustment, the number of things that can be learned.

The action system illustrated in the stentor

The expression *action system* is borrowed from Professor Jennings.[2] A good illustration of an action system may be found in that of the stentor, the behavior of which is described

[1] Compare § 7.

[2] Compare *Behavior of the Lower Organisms*, p. 300.

by the same author.[1] The stentor is a minute, trumpet-shaped, aquatic animal, which is usually attached at its foot to some object on the bed of a body of water. Its food is carried through its flaring head or mouth down into its body by currents of water, which may be set in motion or controlled by the movements of cilia or hairs that cover the animal's surface. If undesirable foreign substances are introduced into the water and enter the mouth of the stentor, it may bend over, thus getting its mouth in a different place. If the obnoxious elements continue to disturb it, it may try to remove them by reversing the movement of the cilia. If this fails, it may contract temporarily. Finally, as a last resort, after repeated trials and delays, it may break loose from its attachment, and swim away to a more favorable locality.

Here we have in a very simple organism four alternative methods of meeting a specific situation. These exhaust its list of resources for learning, so far as this case is concerned. It cannot learn to meet the emergency in any other way than has been provided for it by heredity. But higher organisms have far more complicated action systems. Hence their powers of learning are correspondingly increased. They possess a complicated set of muscles, to which are attached a great variety of adaptive structures, such as teeth, horns, protective armor, hoofs, etc. Of all these the most extraordinary in the possibilities of adjustment that they involve are the hand and the vocal organs in man. Through the hand man is able to extend to an almost inconceivable degree the artificial resources of adaptation which make up what we have called the artificial environment.[2] Tools, clothing, weapons, shelter, fire, — all that enormous array of instrumentalities by which man improves upon the equipment with which nature provides him, — are very considerably dependent on the remarkable versatility

Complicated character of the action system in man

Corresponding resourcefulness in learning

[1] *Ibid.*, pp. 170–179.

[2] Compare § 4.

of the hand. They give to man an action system incomparably richer than that of any lower animal.

Just as the hand, when reënforced and controlled by adequate physical and mental power, enables an enormous expansion of the action system in the way of artificial resources, so the vocal organs, when given similar support, put at man's disposal, to such a degree as to revolutionize his life, an action system consisting of methods of social coöperation. Very little that man does fails to utilize in some way such methods, and his extraordinary efficiency in the use of social devices rests on his ability to communicate.

Intelligence an adjunct to the action system in higher animals

The use of the hand and the vocal organs to accomplish such results is, of course, so dependent upon intelligence that the servants are almost lost to sight from the overwhelming interest in the master. It will be thought that among the resources of the action system by far the most significant is mental ability. Such is, indeed, the case, and later in our discussion [1] an endeavor will be made to analyze the function of intelligence, and to determine the point of view from which it constitutes part of the resources for action. That matter may here, however, better be left as a promise, in order not to complicate too much the consideration of the rudimentary factors in learning, which is the object of the present section.

Interdependence of instincts and action system

The possibilities in the way of learning depend, on the one hand, on the number and variety of the instincts and, on the other, on the richness of the resources of the action system. These two factors are in great measure interdependent. We have already shown in discussing the evolution of wants [2] how new types of reaction, when they arise, bring with them new needs. The power of movement brings with it that of sensation to direct it, and this in turn makes its possessor dissatisfied with unfavorable conditions in regard to the symbols

[1] Compare Chs. V, VII, VIII, etc. [2] Compare § 5.

of sense. These become quite as important to the adjustment of the individual as are the fundamental conditions of life which they more or less immediately and accurately represent. The expansion of the action system to include apparatus for swifter and more prolonged movement involves the expansion of the functions or instincts to include the need of a satisfactory environment of sense. A need could not arise unless there were methods by which it could, in part at least, be met, and the mechanism by which such methods are carried on could scarcely long survive any need for their use. This interdependence leads to the customary application of the term *function* indifferently to the wants and to the means by which they may be satisfied. Nevertheless, just as we have here limited the term *instinct* to the need, so perhaps it will be in the interest of clearness to regard the function as the instinct. To speak of an instinct as a function, then, simply emphasizes the fact that it is endowed with an equipment of activities for its realization. Thus we preserve the distinction between the needs and the action system, while recognizing their interdependence.

Factors concerned solely in effecting readjustment

The value of this distinction comes especially in evidence when we pass on to the discussion of the last two factors which were included in our analysis of the condition of learning. These are, sensitivity to lack of adjustment, and a physiological provision for utilizing other than the customary reactions to meet a certain situation. Here we come upon that part of the hereditary equipment of the organism which exists solely for the sake of readjustment, or learning. It is possible to imagine a creature with a complicated action system and a complicated set of instincts, or needs, but with the responses so perfectly adjusted to the stimuli that there never would be any occasion for readjustment. Moreover, the same creature might have these reactions so mechanically attached to their

respective stimuli that no others could be substituted. Such a being could not readjust.

In our hypothetical complicated being with many reactions but no power of readjustment, there would be no occasion to distinguish between the needs and the action system. Such a creature would be like a machine, having no needs, and, except for the purposes of some one who uses it, no functions. It would operate, but not in any true sense react. The distinction between the needs, uses, instincts, or functions and the action system becomes real and important the moment we consider the possibility of refitting the latter to the former. Then it becomes a vital distinction, indispensable to a comprehension of the nature of the learning process. As we have seen, the needs and the action system expand together. Each new instinct involves a group of typical activities, through which especially it is able to function. The essence of power to learn lies in the power to use new activities to function at the behest of old instincts as well, or, as is quite as frequently desirable, to be able to use old forms of activity in the interest of new purposes. Under such circumstances alone do the number and variety of the instincts and of the resources of the action system become determinative of the degree of the power to learn.

Power to learn as capacity to utilize existent powers in new uses

The physiological arrangement that makes possible a ready resort from one to another of the resources of the action system is a central system of nerves bringing together the various segmentary circuits in the nervous system. The evolution of this central connecting system has already been discussed in connection with the evolution of infancy.[1] Given such a system, and the readiness of learning depends on the absence therein of preferential associations between stimuli and responses. Wherever owing to heredity or training such prefer-

Its physiological basis

[1] Compare § 7.

ential associations exist, there the power to utilize other than the associated responses is in part interfered with, and rendered slow or difficult. Heredity, therefore, endows one with capacity to learn by the gift of a central nervous system with which all parts of the sensory and motor apparatus are closely connected, and in which the preferential associations tend to be few or feeble and the amount of diffusion in nervous currents correspondingly great.

This primitive equality of permeability among the lines of discharge in the central nervous system is accompanied by a like degree of sensitiveness on the part of the nerves in regard to the success or failure of any reaction. It is probable that both the tendency toward diffusion and the increased sensitiveness are closely associated with lack of well-established synapses among the nerve endings and a large proportion of gray matter in the nerve centers. The theory that associates the chemical activities of this gray matter both with the energies of readjustment among the nerve associations and the phenomena of feeling and cognition seems in a general way, at least, in accord with facts. In that event, the hereditary basis for education includes unformed synapses and much gray matter.

Learning as a basis for enlarging the action system

We have spoken of the action system as evolving in the race under the pressure of specific needs, to meet which the power to perform new types of activity appears. Their development is not learning, nor is it primarily for the sake of learning. The power on the part of the individual to learn means, then, in the first instance, not the power to do new things, but rather that of doing old things in response to needs not hitherto associated with these reactions. However, there is a sense in which this power quickly to readjust the action system to the needs involves an actual increase in the resources of the former. This springs from increased power of performing coördinations of movement. A combination of movements

may be so different in character and function from any of its constituent elements as to rank as a distinct type of activity, a separate constituent of the action system. Therefore, the resources of such a system are composed not only of what might be called certain elemental movements, but of all sorts of possibilities in the way of their coördination. A nervous system that connects various parts of the action system enables coördinated movements. One that learns permits the formation of new coördinations. From both causes we have a positive addition to the resources of the action system, an increase in the number of combinations made possible.

Dissociation and recombination of the elements of the action system

We may for the sake of analysis distinguish easily two cases in which learning increases the number of coördinations: (1) Muscles moved naturally in unison may be brought to move separately, and in combinations where each moves differently from the others, as when the movements of the fingers are dissociated and each takes up a different task responding to a distinct factor in the stimulus. Such new coördinations are well illustrated in piano playing, in typewriting, in speech, etc. (2) Serial coördinations may be built up in which the stimulus to each successive movement arises from the performance of its habitual predecessor rather than from the perception of some external object such as ordinarily arouses the act. Thus, in spelling, the writing of a letter may be suggested by the general thought of the word plus the feeling of the writing of the preceding letter, rather than from the thought of the letter to be written. As a result of dissociation and association such simple serial rhythms as walking, running, etc., are broken up and reorganized into the complicated coördinations of dancing and the like. Thus the complexity of both simultaneous and serial coördination is continually increased by dissociation of factors naturally fused and the reorganization of these into new combinations.

Method of the evolution of complexity of movement

The development of complexity of movement parallels that of complexity of consciousness. As the latter begins with a vague, undifferentiated mass of sensation, and proceeds through analysis and under the stimulus of succeeding experience to break this into perceptions and sensations, images, and concepts, and all the rest of the complicated content of mature consciousness, so movements are at first crude mass movements rather than coördinations, and later through analysis and new syntheses they become the fine adjustments of skill. A similar history appears in the evolution of a species. Professor Loeb has spoken of instinctive acts as "bundles of reflexes,"[1] thus implying that the simple elements preceded the complex organization, and that by their union they make it up. The more usual case is where the reflex represents a special minute adjustment that is evolved in the course of the development and organization of instinctive tendencies. Professor Jennings points out that the actions of primitive organisms are not, strictly speaking, reflex. This is because "the reaction to a given stimulus depends on the physiological state of the organism, not alone on its anatomical structure; and physiological states are variable."[2] The movements of simple forms of life resemble instinctive activities rather than reflexes, in that they spring from some general need of the body and involve a movement of at least a large part of it, in that they depend on internal conditions quite as much as upon external stimuli, and in that they are replaced by other movements in case the first reactions are unsuccessful. The reflexes in the higher organisms represent localized reactions that are in great measure rendered necessary because of the development of special organs with such definite adjustments to external conditions that the control of these adjustments is largely

[1] *Comparative Physiology of the Brain.*
[2] *Behavior of the Lower Organisms*, p. 280.

a matter of mere mechanical reaction to outer stimuli. The accommodation of the lens in the eye to the distance of the perceived object is apparently an ideal example. However, even this mechanical reaction is dependent not only on the external stimulus, but also on the internal condition of mental attention, and such reflexes as winking and sneezing can be utilized in emergencies far different from those to which they are the automatic response. Thus the reflex, specialized though it may be, is susceptible to a certain amount of internal control and to utilization for other than its specifically appropriate emergencies.

Power to learn as a basis for the differentiation of the action system

The powers of coördination and of learning to coördinate lie back of the differentiation of the action system. This is true for the very simple reason that specialization is impossible without coöperation. Differentiation and integration are complementary, and for successful living inseparable. Thus the evolution of a central nervous system with its powers of organization and reorganization means the evolution of the condition under which the action system is permitted to differentiate and become highly specialized. The enlargement of the resources of learning comes as an outgrowth of the capacity to utilize these resources in readjustment. Central coördinating power not only enables the addition of complex movements to the simple ones already possible, but it opens the opportunity for the evolution of new simple adjustments so specialized as to be useless until they are combined with others.

Learning as a modification of the instincts

We have spoken of learning as though it were concerned solely in the refitting of the action system to the instincts. Such is, indeed, its primary function. The service of sensitivity to this process is merely that of stimulus and guide. However, sensitivity has a second function, in which it cooperates with the power of association to modify and differ-

entiate the instincts which it serves. We learn to be sensitive to conditions that were not at first provocative of unrest. We cease to feel the force of wants that earlier tended to overmaster us. Thus we learn not merely to satisfy instincts in ways other than the customary ones, but also to change the relative vigor of our original instincts as a result of the conflicts and associations of experience.

Summary

It has been the purpose of this section to state the simplest hereditary conditions of learning, leaving elaboration to subsequent discussions. We have seen that power to learn depends on the number and variety of the instincts, on the one hand, and on the resources of the action system, on the other. But this complex equipment would not help the possessor in learning unless he also were endowed with the power to readjust the action system to the instincts. Such power comes through sensitivity and a central system of nerves affected by all the wants, and in turn capable of stimulating all or most of the responses that the individual can make. Both conditions are met in the domination of the cerebral cortex with its abundance of gray matter and its multitudinous paths of association. Defining automatic, reflex, and instinctive acts as hereditarily preferred reactions to certain instincts, the forms of activity of those who can learn would tend less and less to be of such a character, and so devoted solely or mainly to the use of single instincts, and to become more and more random results of diffused nervous discharges, calculated to evince many new uses and thus to furnish the material for the new or acquired preferential associations of habit.

Moreover, the power of coördination of such a central nervous system enables an expansion of the action system through the addition of new complex organizations of activity to the simple primitive ones, and through offering an opportunity for the evolution of specialized activities that would

be useless except in large coördinations. Finally, the associative power of the brain permits us to learn not only how to satisfy our wants, but also what it is better to want. Thus we may reorganize the ranking of the factors to which sensitivity is attached, and this again is an important phase of learning.

Section 10. *Education as supplementing heredity*

The function of heredity is, of course, essentially conservative. The discontinuities established because of reproduction it mends in part by restoring to the young about the same equipment of adjustments and resources as that with which the parents began life. It is racial habit, — that upon which the species can rely as comparatively permanent, — as a capital not to be impaired by the gains or losses of any generation. In proportion as environments are indeterminately variable, these acquired characters become numerous and indispensable to mature life. Many, indeed, most of them, it might be of advantage to preserve. Each generation has to learn habits of speech, of manners and morals, of occupations, of dress, and of countless other things that it might seem economical for them to get by heredity. However, the indispensable capacity for readjustment must be bought, even at such a price.

Human children need to relearn most of the acquired characters of their parents

On the other hand, the waste is, in part at least, remedied by the function to enable which it is incurred. The greater the power to learn, the more readily the new generation can regain such of the acquired characters of its parents as seem necessary or desirable. The process of learning these ancestral ways is, of course, education, and in performing this service education is a conservative agency and supplements heredity. This function of education is, however, a secondary one.

Recapitulatory education as supplementing heredity

From the point of view of the individual, learning is always readjustment, change, ordinarily progress. When, however, this process concerns itself with relearning the characters previously acquired by the parent, education becomes from the point of view of the race a factor making for conservation rather than for advance. Education devoted to this secondary function we may call recapitulatory.

Social heredity as an aid to recapitulation by education

Recapitulatory education that takes place by the hard method of unassisted individual experience has nothing about it except its conservative effect to ally it with heredity. But when agencies appear that tend to aid it, these may well be regarded as instrumentalities of heredity as well as of education. Such an agency is social intercourse, by which the young of a species endowed with power to learn may acquire with greater rapidity the practices of their ancestry. The relearning of the acquired characters of the race through the aid of social intercourse has been aptly called by Professor Baldwin "social heredity." [1]

Interdependence of society and education

Save when it takes the form of social heredity, recapitulatory education is very limited in scope. However, society is, as it were, ready and waiting to perform this function. Capacity to learn, the non-inheritance of acquired characters, and the immaturity of infancy involve each other. But infancy involves parental fosterage, and this means, as Mr. Fiske points out,[2] the existence of society, at any rate in the form of a family consisting of mother and offspring. The coöperation of the male parent in the care of the young makes it possible for them to be even more helpless, and hence there results to the species the advantage of greater power to learn. Society has a selection value because of the importance of the educability that it makes possible, and even though it had no

[1] *Mental Development, Social and Ethical Interpretations*, Ch. II.

[2] Compare *Through Nature to God.*

other function this would doubtless account for the tendency of evolution in its direction. But the social intercourse that exists primarily to foster the immature during the period of learning is utilized to hasten the process of reacquiring the parental habits. Parental fosterage enables the growth of capacity to learn, and this in turn profits by the social intercourse that it requires. Thus such intercourse becomes parental training, and social heredity is born.

The interdependence of society and education will be discussed further in the next chapter. The aim of this section is to point out, first, how education repairs the loss incurred for its own sake, and in the form of recapitulatory education supplements heredity by handing on acquired characters; and second, how society, indispensable to the protection of immature infancy, combines with the capacity to learn to aid the process of recapitulation, thus giving rise to social heredity.

Advantage of social over physiological heredity

It will be interesting to note that social heredity revives somewhat the inflexibility of its physiological prototype. It constrains the individual to follow conservative methods, even though, if untrammeled, he might find better ones. However, there is this advantage. Physiological heredity can be modified only by the slow and savage process of natural selection working upon variations in the drift of heredity itself. On the other hand, social heredity, however tyrannical it may be, can be revolutionized if man so wills. In general, it occupies, so far as regards the conservatism of its effects, an intermediate position between physiological heredity, on the one hand, and uncontrolled individualism, on the other. The complex question of its evolution will be resumed in the next chapter.

Section 11. *Education as antagonizing heredity*

Persistence of undesirable hereditary traits

In spite of all her safeguards Nature usually endows her children with a partially undesirable physiological inheritance. For this case there are two remedies: Either selection may root out those who are seriously handicapped, carrying with them their prospective progeny, — a procedure good for the race but severe on the individual, — or education, more kind to the victim of a bad inheritance, may strive to protect both him and society from its dangerous consequences.

Among the undesirable inheritances we may include both instincts and instinctive acts. Some wants may with evolution, and especially with advance to civilization, become less important. Indeed, many of the minor instincts may cease to be desirable at all. Fear and anger are certainly far less useful than they have been, and, if not largely suppressed, do more harm than good. Christianity maintains that the special instinct for vengeance should disappear altogether. Various cults have made war upon this or that instinct, so that very few have escaped the hostility of some idealists. It may safely be said that enlightened humanity favors a far different adjustment among the inherent desires than Nature is wont to provide. The undesirability of native tendencies is still more evident in the case of the instinctive acts. Civilization has little use for the inherent methods of gratifying fear, anger, curiosity, sexual love, rivalry, etc. In respect to them education has not only the task of establishing approved habits, but also that of breaking up old preferential associations.

Types of instinctive survivals

In discussing the question of how this control is brought about we may begin by considering a classification of instinctive acts from the point of view of their history and general function. (1) A great number of them retain for man to-day their original use in the way of bringing about desirable rela-

tions with objects in the environment. This use may be quite as great as it has ever been in the history of the species; for example, such acts as nursing or walking. On the other hand, it may have come to be comparatively rare, as in the cases of striking from anger, or of flight from fear. (2) Many instinctive acts have wholly lost their original use. Such is probably true of unfleshing the teeth, or biting from anger, or paralysis from fear. Acts of this class are either simply survivals with no present function, or they have been transferred to the social use of indicating to others the state of mind of the person who performs them. The instinctive expressions have had in most cases this social value from the beginning. With evolution, the other uses, if they existed, have disappeared, leaving only that of expression. (3) With the growth of power of association instinctive acts may come to constitute the response to stimuli analogous to those to which they were originally attached. Professor James calls this the "principle of reacting similarly to analogous-feeling stimuli."[1] An illustration is the making of a wry face when some disagreeable situation appears, although it may not in the least appeal to the sense of taste. (4) Finally, we have that large class of internal disturbances that constitute, according to the James-Lange theory, the basis of the emotions. They affect mainly the processes connected with the circulation of the blood, secretion, digestion, and respiration. Their function is in many cases plainly to further the external acts by which the situations that arouse the emotions may be satisfactorily dealt with. Thus the roused heart beat may furnish the increased blood supply for more vigorous action.

Professor Dewey is inclined to attribute to these internal emotional disturbances the general function of providing the energy that stimulates and fosters readjustment.

[1] *Principles of Psychology*, Ch. XXV.]

"Whenever there is difficulty in effecting adjustment of means and ends, the agent is thrown into a condition of emotion. Whenever we have on one side the idea corresponding to some end or object, and whenever we have on the other side a stirring up of the active impulses and habits, together with a tendency of the latter to focus themselves at once upon the former, there we have a disturbance or agitation, known on its psychical side as emotion. It is a commonplace that, as fast as habit gets definitely formed in relation to its own special end, the feeling element drops out. Now let the usual end to which the habit is adapted be taken away and a sudden demand be made for the old habit to become a means toward a new end, and emotional stress at once becomes urgent. The active side becomes all stirred up, but neither discharges itself at once, without any end, nor yet directs itself toward any accustomed end. The result is tension between habit and aim, between impulse and idea, between means and end. This tension is the essential feature of emotion.

Organic emotional disturbances due to tension between habit and aim

"It is obvious from this account that the function of emotion is to secure a sufficient arousing of energy in critical periods of the life of the agent. When the end is new or unusual and there is great difficulty in attending to it, the natural tendency would be to let it go or to turn away from it. But the very newness of the end often represents the importance of the demand that is being made. To neglect the end would be a serious if not fatal matter for the agent. The very difficulty in effecting the adjustment sends out successive waves of stimuli, which call into play more impulses and habits, thus reënforcing the powers, resources, at the agent's command. The function of emotion is thus to brace or reënforce the agent in coping with the novel element in unexpected and immediate situations." [1]

Such tension useful in stimulating readjustment

It is evident that each of these four classes of instinctive acts may prove disadvantageous to its possessor. In general, the utilities that have remained most stable are those connected with expression and with the emotional disturbances

Present need of control of most instinctive acts

[1] *Interest in Relation to the Training of the Will.*

that further readjustment. Instinctive methods of getting results have with civilization come under the ban, and have been replaced by habits far more consonant with social welfare. Even the instinctive forms of expression are usually replaced by quieter methods, and the emotional disturbances are feared lest they lead to a loss by the will of its grip upon conduct.

We have already spoken of variation and selection as helping on in the process of removing hereditary obstacles to success. There can be little doubt that these agencies have been throughout the evolution of civilization at work slowly to transform the instinctive equipment of the advancing races. According to Sutherland:—

"The moral instinct, therefore, is, in social animals, the result of that selective process among the emotions which tends to encourage those that are mutually helpful and to weaken those that are mutually harmful."[1]

Selection accomplishes this result, not merely by the elimination or subordination of instinctive acts hostile to social welfare, but also by encouraging their evolution into deferred or imperfect tendencies. Thus it opens the way for control by education.

Two methods of controlling instinctive acts

In the endeavor to master the hereditary activities two methods have been employed by education: one negative, the other positive. The negative method bends all its energies

Defects of the negative method

toward a direct suppression of undesirable reactions. As these are for the most part closely associated with emotional disturbances, negative discipline aims at asceticism, or, better, indifferentism. This policy is generally recognized to be faulty in the extreme. It neglects to take account of the fact that the tendency to react to situations in some positive way is inevitable. Inhibition is never by mere elimination. Its

[1] *Origin and Development of the Moral Instinct*, Vol. II, p. 304.

primary result is, as Professor Dewey says, emotional disturbance, and its secondary one, some consequent reaction. Thus it becomes effective by the positive method of substitution. To attend only to the negative phase of control is to omit to consider the desirability of the substituted reactions by which alone such control can be achieved.

Control by substitution

Substitution aims to establish one preferential association instead of another. It is greatly facilitated by deferred maturity in the associations that it is desired to replace. When one becomes accustomed to react toward objects in a certain way, the instinctive tendency to react differently will, if it appears later, very likely be inhibited. Thus we may create what is commonly known as a "happy family," where lions and lambs, foxes and fowls consort together in amity. The instinctive hostility of these species is for all ordinary occasions forestalled by habits that are formed before the tendencies have grown strong. Whether fear of the dark is instinctive or not, a child may be so habituated to it that without encouragement the tendency will either not appear or be very mild. An inherent weakness that predisposes toward intemperance in drink may not display itself if the antagonistic habits are well formed. So, too, the mating impulse, because it is so long deferred, may, in spite of its strength, be completely suppressed so far as its normal expression is concerned.

Substitution may be of reactions or of instincts

Substitution may effect either of two results: It may cause certain instincts, when they are roused, to result in acts which have been made their response by training rather than in the acts instinctively associated with them. Thus we may when angry strive to punish the occasion of our wrath by treating him with contempt or by stinging retorts rather than by a physical attack. On the other hand, substitution may strive to associate certain objects with instincts other than those

which by heredity they tend to arouse. Professor James has it in mind in making the following statement: —

"Another sort of arrest of instincts by habits is where the same class of objects awakens contrary instinctive impulses. Here the impulse first followed toward a given individual of the class is apt to keep him from ever awakening the contrary impulse in us. In fact the whole class may be protected by this individual specimen from the application to it of this individual impulse." [1]

This sort of substitution may be illustrated in the training of wild animals, in the cultivation of the instinct to save rather than to use, or that of treating strangers hospitably rather than of looking upon them with suspicion. It involves a readjustment in regard to the inherent sensitivity of various instincts. Some are encouraged by being habitually attached to objects that naturally rouse others. Thus the others atrophy for lack of occasion to display themselves.

Illustration in the control of emotional expression

The methods and effects of substitution in reorganizing hereditary tendencies can, perhaps, best be illustrated in the case of emotions and the expressions of emotion. Every instinct has its emotional side, mild or intense, depending upon the character of the emergency and the nature of the person who faces it. Moreover, the range of emotional expression includes all four classes of instinctive acts that were distinguished earlier in the section. Thus the emotion and its expression include all the factors involved in the readjustments we are considering. Taking the example of anger, a child with an hereditary disposition to become violently wrathful might be carefully dealt with on occasions that excite the emotion, until gradually it becomes accustomed to regard these situations in such ways as appeal to its sympathies, its sense of humor, its knowledge of consequences, etc. It will,

[1] *Principles of Psychology*, Vol. II, p. 395.

however, probably be impossible, as well as undesirable, entirely to prevent the appearance of the emotion. Nevertheless, when it is roused, its manifestations in merely instinctive ways may be inhibited by well-bred methods of attack or defense. If these are successful in meeting the emergency, the occasion for anger has disappeared.

If, however, the emergency cannot be regarded as other than exasperating, and if habitual or intelligently controlled methods of dealing with it fail of effect, then the emotion usually grows more violent, and the primitive instinctive reactions are apt to be evoked. Emotion, functioning on Dewey's theory as the stimulus to readjustment, provokes the brute hereditary responses as a final resort. Suppose, however, that the occasion is one where according to social standards such reactions are not permissible. For example, one may not strike a woman. Here the remedy lies in the cultivation of an intense repugnance for this particular sort of act, such that the barest anticipation of it would cause its inhibition. In this case the instinctive act is trained by association to rouse an instinct or feeling that paralyzes and so replaces it.

Phases of such control

We have then the following phases in the control of the emotion: (1) the substitution of contrary emotions habitually associated with its instinctive stimuli, (2) the substitution of habitual expressions for instinctive ones, (3) the inhibition of some instinctive expressions by emotions which they are trained to rouse. Under these conditions we may suppose that no emergency will excite a certain emotion unless in the nature of the case the vigorous effort that will thereby be stimulated is necessary. In that event, the first effect of the emotion will be mild intellectual excitement with habitual activity under conscious control. Here emotion favors concentration of attention, *presence of mind.* When such methods fail to remove the difficulty, we may suppose that the time has

Emotion as favoring presence and absence of mind

come for more primitive desperate measures, such as could not be initiated in reflective attitudes of mind. Hence the more intense emotion, scattering the attention and producing *absence of mind*, finds its function, and brings about more violent instinctive or random reactions as a last resource. Even here, however, it is possible to inhibit certain intolerable acts by associating them firmly with counteracting emotions.

Emotions may be suppressed by reaction to their expression

It is interesting to note that the emotion itself according to the James-Lange theory is to be controlled, at least in part, by substantially the last of these methods. For if the expressions of emotion give rise to the emotion itself, as these psychologists affirm, all that is necessary to control it is to inhibit these expressions. This may be, and is, in fact, most frequently done by training the individual to be sensitive to the exhibition of self involved in these expressions, or to other objectionable features connected with them. Thus the emotion is provided with a safety valve by which it can check its own extremes. Herein lies the oft-mentioned relieving or homeopathic effect of emotional expression. It distracts the attention from that which excites it and thus allows the emotion to subside.

The fact that an emotional state has a tendency to call into activity latent instinctive tendencies that may be undesirable is the basis of the somewhat common notion that it exists to be repressed rather than utilized. This conception has appeared continuously in educational theory, especially that of those whose ideal was discipline. Even Herbart, who was far enough from being a disciplinarian, looked upon emotion as something to be put down.

Herbart on the control of emotion

"The more perfectly the human and especially the male organism develops, the less is to be seen of all these emotions in the sphere of educational observation, and this, too, as

early as the later years of boyhood and the beginnings of youth." [1]

Herbart distinguishes between feeling and emotion, condemning the view that the latter is simply stronger feeling. Feelings, he thinks, may be profound and yet not disturb our equanimity, whereas emotion always involves a bodily disturbance that is likely to prove a hindrance to the assimilation or utilization of experience. Feeling is valuable in that it always enhances the efficiency of ideas; emotion interferes and, in Herbart's own phrase, "makes feeling dull."

It is the merit of Professor Dewey's view that it establishes the continuity in nature and function between feeling and emotion. However, the more violent emotional disturbances do interfere with thought, and cause a resort to mere instinctive forms of activity. Hence, Herbart and common opinion are right in drawing a distinction between the feelings or milder emotions, which are the dynamic elements of thought, and the intense emotions, with which education has nothing to do except in the way of antagonism.

Summary. In conclusion, we may say that heredity leaves education much to undo. Many instincts and instinctive acts are no longer useful, except, perhaps, in extremes. Some are undesirable or even dangerous. This is especially true of the more violent emotions and their expression, which may be taken as the type of that which education must control or suppress. Control can never be by mere negative discipline, but must proceed by the positive method of substitution. This method is made easier in application when the instinctive tendencies are deferred. In any case, it aims to associate with desirable instincts and emotions, the objects or situations that would naturally arouse undesirable ones, and to forestall objectionable instinctive responses to these emotions by establishing more

[1] *Contributions of Psychology to Education*, Letter XIII.

satisfactory habitual ones before nature has had its way and hardened its tendencies into habits. When education has done its work properly, it may be hoped that the intenser emotions will never appear except where a resort to daring instinctive experimentation is necessary. Even here intolerable responses may be paralyzed by training inhibiting emotions to play the watchdog upon them.

CHAPTER IV

EDUCATION AND SOCIETY

SECTION 12. *Early evolution of social heredity*

THE uses of society have been alluded to from time to time. At the foundation of them all lies the function of providing for the individual security against conditions that might overwhelm him in isolation. Of all the many phases of this security, that which consists in the parental care of the young while they are receiving their education, and which supplements this care by positive instruction, is probably the most important. For without it immaturity could not exist, and, therefore, all the racial flexibility that comes through non-inheritance of acquired characters and great capacity for education would be impossible. Society may be conceived as the *pack* that hunts more effectively from coöperation, as the *granary* that sustains the individual when his daily search for food is unsuccessful, as the *army* that protects him against foreign enemies or the *constable* that preserves his personal rights, as the *organization of industry* to utilize the division of labor; but behind all these functions lies that ultimate one of parent and schoolmaster. Society is primarily an educational institution.

Fundamental function of society that of education

The utility of society determines the incidence of evolution toward a social régime. Natural selection in the upper strata of life wars upon the non-social. "United we stand, divided we fall" is an epitome of the history of earlier civilization.

Whatever makes for social solidarity is, therefore, at a premium in the struggle for existence. The social qualities are, of course, fundamentally hereditary. But they are also partly a product of education. We have parental, social, and moral instincts, but they amount to little unless cultivated in the proper environment. We may expect instinct and training to supplement each other more and more effectively as society evolves.

Stages in the early evolution of social heredity:

The history of this evolution is the history of education. Each stage in the process brings into play new powers, perhaps new instincts, and cultivates these capacities more assiduously.

(1) Parental fosterage

The beginning of this evolutionary process is found in parental fosterage. Sutherland [1] traces the steps by which the task of perpetuating the race is taken more and more from extraordinary fecundity, and placed upon better methods of preserving the young that are brought forth. Among these are devices that make more certain the fertilization of the eggs, guarding the eggs, hatching them by the warmth of the body, nest building, the evolution of the placenta and of viviparous reproduction. In these advances, made with almost inconceivable slowness through countless ages, we see the biologic preparation for parental fosterage. In every case the progress is in the direction of greater economy, fewer offspring, and greater care of those that are born.

Thus, according to Sutherland, parental fosterage originates as an outcome of evolution in the direction of greater economy in reproduction, prevention of the waste of life. In a sense it is a negative factor, merely protecting the young, but not equipping them with positive adjustments. However, the evolution of fosterage permits readjustment by rejuvenation to become more and more prominent. Thus it enables the

[1] Compare *Origin and Growth of the Moral Instinct.*

evolution of capacity to learn. This in turn transforms the social relation of parent and offspring into an educative one. Mere negative fosterage becomes positive training. Companionship evolves from protection into education, by the mere growth on the part of the young of the power to profit by it in acquiring the habits of their parents.

(2) Parental training

Forcing the young to learn

With the growth of power to learn the instinct of parental fosterage becomes supplemented by a tendency to aid the young in their work of development. The beginnings of this instinct to teach may be noted in the lower animals.[1] The classic example is that of the birds striving to teach their young how to fly. Such instruction amounts to little more than forcing the nestlings to use their powers, but it undoubtedly facilitates the process of maturation, and cuts short the period during which the efficiency of the family group is crippled by the helplessness of some of its members. It seems like a fairly safe generalization to say that the instinct to teach begins with the tendency to thrust the young into positions where at least a partial use of their resources is necessary.

Growth of imitativeness and of training through prolonged companionship

However this may be, it is evident that the prolonged protecting companionship of the parent offers in itself a fruitful opportunity to the imitativeness which is inevitably involved in any high degree of capacity to learn. This imitativeness has itself been called an instinct. The psycho-physiological basis of it will be discussed later. Here it is necessary only to notice that it appears in all the higher social animals, as a somewhat blind tendency to do the things that are perceived, provided the action system of the animal makes possible such acts. The perception of the act gets associated with its performance so that the one inevitably leads to the other. Here we have the "circular reaction" of Professor Baldwin.[2] It

[1] Compare Letourneau, *L'Evolution d'Education*, Ch. I.

[2] *Mental Development, Methods and Processes*, p. 133.

does not of necessity involve any notion of the end to be gained through such imitation.[1] Thus the monkey and the parrot imitate a great variety of things the significance or use of which they do not in the least comprehend. It simply happens that they can do these things, and that the association between the perception of the acts and the impulse to perform them can and does get established.

Great amount learned by uncalculating imitation

But however blind the impulse or simple the act, the tendency to repeat what is perceived is replete with possibilities in the way of handing on ancestral habits. Indeed, it results in a social heredity almost as mechanical in its methods of transmission as is physiological heredity. Natural selection favors those who set good models on the one hand, and those who imitate on the other. Thus the drift is toward a larger and larger number of racial or group usages, which derive their value either from their service to the individual or to society. By imitation the lower animals learn to seek food or water or safety in certain places. In a similar way they gain some power of interpreting the signs of nature or of the social attitudes of their fellows. They learn to make signs that result in communication. As we sometimes say, they learn to understand one another.

Mechanical imitation as leading to intelligent use

This uncalculating, almost unconscious imitation may lead the mind, even while the acts are being repeated and made into habits, forward into a dim appreciation of the use of what is being done. Thus it is with the imitative as with instinctive tendencies, that their purpose may come vaguely or clearly to be understood when they have been repeatedly carried into action. The human child imitates words without knowing

[1] Professor Thorndike surmises (*Animal Intelligence*) that lower animals never consciously endeavor to gain the results of others by imitating them. This view Mr. Hobhouse (*Mind in Evolution*) rejects, although he admits the rarity of such purposive imitation.

their meaning or intending to use them in communication. But the use of the word is soon learned after the power to make it has been acquired. So brutes may come to use with great skill and considerable intelligence habits at first acquired blindly through imitation. But it must not be supposed that conscious recognition of the value of these habits is indispensable to their successful practice.

Imitative transmission more modifiable than instinct

We have already emphasized the fact that this social heredity is but little more flexible than the physiological inheritance. It is also usually hammered out in the same savage way. Those species that have a bad social heredity are eliminated by selection, because their young acquire their habits almost as blindly and as certainly as though these had come merely by being born. Yet however small the difference, social heredity has nevertheless a real advantage in modifiability. A disadvantageous instinct, although it may be suppressed in the parent, will wait its opportunity in the child. A habit, suppressed in the elder generation, is no longer a model for imitation, and without loss of life it disappears from social heredity. Nature or the environment can by coercing the individual eliminate the traits preserved by imitation, and the extinction of the stock or strain of blood is not necessary. Moreover, the destruction of parents or their separation from their offspring before the latter have adopted some of their habits would cause these traits entirely to disappear in a generation without the elimination of the stock. Thus there is real advance in flexibility.

We have seen that parental training may supplement parental fosterage by instinctively selecting the safe and advantageous time for thrusting the young on their own resources. When the young are markedly imitative, and the amount of social heredity to be transmitted correspondingly large, the instinct to prolong the companionship of parent and offspring

beyond the time of dependence comes to aid the educative process. Thus the two instincts, the one tending to drive the young into independence, and the other preserving social communication with them so that they may learn through imitation how to get on by themselves, supplement each other.

(3) General social training

The educative advantages of social intercourse with parents become greatly multiplied in the group life that the higher social animals display. The young imitate other adults besides their parents. Thus parental training comes to be supplemented by that of society.

Its conservative and progressive effects

General social training introduces interesting new possibilities in the way both of variation and conservation. The model of parental training tends to be interfered with by that presented by others in the social group. Family peculiarities may thus be swamped out, because of the mere numerical preponderance of those who set a different pattern. Thus the children tend toward the norm of society rather than the variation of the parent. Galton's law of regression toward the type finds illustration in social as well as in physiological heredity.[1] On the other hand, general social intercourse offers in many cases not one model, but many. Here it tends to break away from the conservatism of family training and to suggest differentiation and variety.

Preferential imitation

The possible conflicts among the models presented by society open the way for struggle and for preferential imitation. An individual who has acquired habits that are especially efficient or noticeable stands out as a preferred pattern for the young. The leader, the hero, is in evidence even among the brutes, and among men his grip enables him, as chance or his will determines, both to check any tendency to vary from the social norm and to swerve the current of social heredity from its wonted channels.

[1] Compare *Natural Inheritance*.

Summary

We may leave the discussion of the social mechanism of imitation to a later section.[1] The next stage in the evolution of the educative function on the part of society is the rise of conscious education. Its appearance is sufficiently important to constitute a revolution in the history of social heredity, and in consequence we may well devote to it a special section. The earlier evolution of social heredity, as we have seen, is summed up in the stages of (1) parental fosterage; (2) parental training, that appears, on the one hand, as a tendency to encourage or compel on the part of the young the development of their powers, and, on the other, as prolonged intercourse, that coöperates with imitation to increase the material of social heredity; (3) general social training, that leads into the complex mechanism of interference among suggestions and of preferential imitation.

In this evolutionary development we may note the constant tendency toward economy of life and of vital force, and toward flexibility in readjustment. The immaturity of rejuvenation and the loss of acquired characters involve expenditure for the sake of flexibility, but parental fosterage, parental training, and general social training tend successively to repair the losses. Indeed, the losses are so well made good through the unthinking mechanism of imitation that the flexibility, so hardly acquired, is well-nigh lost. However, the advance from physiological heredity to social heredity and from parental training to general social training brings in each case some increase in the ease of readjustment. Social heredity can be improved without the destruction of the stock, and the larger social group presents more opportunity for variation in models than does that of the family. This increase in flexibility becomes especially prominent when we reach conscious education.

[1] Compare § 38.

Section 13. *The rise of the school*

Rise of conscious education in the family

The first social unit to strive consciously for the improvement of the young through training is, doubtless, the family. As imitativeness and intelligence grow, it results on the one hand, that the amount gained by imitation becomes sufficient to catch the attention, and, on the other, that the capacity to discriminate the presence of such learning and its significance to the child and to society develops. Thus man becomes at last dimly aware of what his children gain through intercourse. This consciousness is, doubtless, sharpened by the spectacle of children whose education has been by comparison with others either defective or positively bad. The evil of their plight and its causes are detected by those who are concerned in the welfare of others who might if neglected suffer similarly. Consciousness here, as always, appears primarily as a remedial agency.

Self-interest as the motive of general society in consciously educating

Conscious education on the part of the family is a natural outgrowth of the parental instinct. It has concerned itself primarily with the welfare of the children. In a secondary way the welfare of the family group, family pride, etc., have become involved, but the primitive altruism of parental affection has always been its dominant note. The teaching of the simpler acts of skill, of the morality of close personal relationships, and even to a great extent of the matters that prepare specifically for a vocation has always been attended to peculiarly by the family. On the other hand, society, as distinguished from the family, first consciously addresses itself to education, not so much in order to promote the welfare of the individual, as to train in conduct that will strengthen the group.

Illustration in primitive adolescent exercises

We may find the program of primitive conscious education illustrated in those exercises by which savages initiate their young men and women into the rights and duties of adult

members of the tribe.[1] These exercises may be roughly classified into ordeals, drill, initiatory rites, and instruction in tribal traditions, religious beliefs, laws, and customs. Some of these factors may be defective, if not lacking, in the exercises of certain peoples, but as a rule most or all are represented.

(1) The ordeal as a test of social efficiency

Its educational value

The ordeal is the test that determines whether the novitiate is worthy of admission into the tribe. Occasionally it may determine his standing therein. One of its almost universal forms is physical mutilation of some sort, of which tattooing is an especially common type. The tattoo marks are not there merely for æsthetic reasons. They are the tribal brand, symbolical of that which the individual is willing to endure to gain public approval. Fasting and isolation from society, especially that of women, or in the case of girls that of men, are also nearly universal. Isolation is, however, properly ceremonial, and finds its utility in impressing upon the youths the enormous importance of the step they are taking. The forms of the ordeal are of the greatest variety. It may consist in any sort of torture that the fancy or the circumstances of the tribe may suggest, from binding the youth on an ant hill, that he may be bitten by these insects, to suspending him by the heels for an indefinite period. The one who undergoes the ordeal most heroically, *i.e.* most stolidly, comes out with greatest honor. And, indeed, the qualities demanded here are not essentially different from those that make brave and persistent hunters and warriors. The tribe demands of the individual much sacrifice in serving the community through the dire emergencies of savage life. Social solidarity is, it is true, in the long run a source of security to the individual. But it is often purchased at the expense of individual suffering and death, and the willingness to face these prospects without flinching when the welfare

[1] Compare Letourneau, *L'Evolution d'Education*, and Webster, *Primitive Secret Societies*.

of the group is at stake is an indispensable condition of this solidarity. It is fitting, therefore, that the young men, and to a certain extent the young women as well, should at the beginning of their adult life realize by direct experience what is expected of them, that the standards of social approval should be applied to them in so serious a fashion as to insure a real test of their courage, and a vivid realization on their part of the glory of success and the shame of failure.

(2) Drill as social culture

The same motive of socialization appears as the basis of the other features of primitive adolescent training that we have mentioned. The drill trains either in hunting or in war. Its object is to mold the individual into habits that tend to make him merely a part of a larger unit, with no interests separate from this. He must be made subservient to the will of society, whether that be expressed by an autocratic leader or by public outcry. He must acquire habits of coöperation and of obedience and ideals of glory, that transform him from a child of nature into a creature of the social order. Ratzenhofer[1] and Gumplowicz[2] contend that mankind emerged from the primitive social condition into organized society as a result of the conflict of races and the subjugation of some by others. We may add that in this struggle the determining element was the efficiency of these adolescent exercises, and that among them the special one of drill, by which military skill was perfected, was of no slight importance.

(3) Initiatory rites and their significance

The initiatory rites contribute further to the same end of efficient socialization. Often apparently meaningless or trivial, they become invested with religious significance, and thus gain all the sanctions that spring from terror of the enmity of the supernatural powers or hope of their favor. To the careless observer the childishness, the abject formalism, the inconsistency, and the stupidity of these customs constitute their

[1] *Die Sociologische Erkenntniss.* [2] *Der Rassenkampf.*

most evident characteristics. Yet to the uncritical savage they seem inevitable, and to one who studies them they come as a whole to evince an utility strangely out of harmony with the irrationality of the specific observances themselves or the superstition of their associated beliefs. The initiatory ceremonial is, in truth, only a phase of the religious life of the people, and it offers an interesting example of the educational function of religion. The rites are unusual, hence they are easily rendered impressive, — indeed, solemn. The effect is heightened by the ordeals with which they are accompanied, and the superstitions by which they are interpreted. Again they are mysterious, and their very lack of apparent meaning enhances their mystery, especially since the only intelligible reason that can be urged for them is that they are all commanded by the powers of the supernatural world. Finally, they almost invariably involve the seclusion of the initiated from society for a certain period, and often the entire ceremony is rigidly kept secret from the opposite sex and, indeed, from all except the participants. The secrecy enhances the impressiveness of the whole initiation.

Socializing effect of religion

One cannot emphasize too much the importance of the religious element in this adolescent training and, in fact, in the work of fostering the social attitude throughout the life of the individual. That religious beliefs and observances have, apart from their truth or falsity, been an useful if not an indispensable agency for socialization can scarcely be denied. Whether with Voltaire we regard them as largely the inventions of the priests to enslave mankind, or with Benjamin Kidd[1] as irrational phases of human thought without which the selfishness of men cannot be held in check, we must admit that they have constituted a force in the absence of which it is difficult to see how civilization could have been possible.

[1] *Social Evolution.*

This function is displayed very clearly in the earlier stages of social evolution, where the sacrifices for social ends that are expected of the individual are often too great to be produced by the motive of desire for approval alone. Even a savage may think far enough to realize that social glory will not help him much when he is dead. But if, when he comes to reason thus, he at the same time believes in the efficiency of the supernatural powers to make him unhappy even after death, his intelligence will not undermine the instinctive or habitual social acts that both society and religion are striving to foster. Moreover, even in the present life, these mysterious agencies may be trusted to frustrate all his cunning in endeavoring to evade the social consequences of cowardice, immorality, or crime, such as come under their ban. Thus, while reason, on the one hand, tends to subvert in the interest of enlightened selfishness certain customs that originate from instinct or unintelligent imitation, it, on the other hand, aided by its ally, imagination, creates a belief in the supernatural which rallies to the defense of the threatened social fabric. Instinctive or mechanically initiated morality is gradually supplemented by the morality of superstition.

Religion a product of reason and a check to its non-social effects

That natural selection encourages those superstitions that make for social efficiency can scarcely be doubted. Especially is this evident in military societies, where the natural courage of the individual is enhanced by the belief that he fights under the protection of a tutelary spirit or deity. However, not only in warfare, but also in those early stages in society where castes exist, religion tends to preserve the group. Here the social order depends on a habit of obedience in the subordinated castes which religion fosters, thus insuring peace, the gradual development of social interdependence and conditions that in the long run make for greater intelligence, and a broader humanity. It is not meant that religion is with primitive men

Superstition favored by natural selection

mere superstition, but if we think of superstition as a false belief about the supernatural, it is undoubtedly largely so, although possibly always containing a substratum of truth. However, even as superstition, religion may be of the greatest value, and hence is favored by selection.

Superstition as the beginning of rationality

Indeed, not only is superstition the parent form of religion, but also of those other offshoots of intelligence, philosophy and science. Primitive beliefs consist of the hypotheses of a dawning rational power among men. But, though imagination and reason are strong enough in their infancy to frame hypotheses, they are not capable of testing them by the methods of philosophy or science. Now hypotheses are not merely true or false. They also have a relation to the practices of life. They are helpful or vicious in their reaction upon conduct. Opinions that exaggerate or distort the facts of reality may yet prove for a time valuable assets of institutional life. The notion that a certain individual or group of men are infallible may be the only means by which a people can be compelled to accept from them certain rules or beliefs of the highest worth or truth. Uncritical dogmatism even to-day has its value as a foundation for force of will either in an individual or a people. Superstitions are made up of uncriticised, unverified hypotheses, and they are valuable in those ages in history when a critical attitude lacks such a guidance from racial experience as will prevent it from resulting in mere individualism, skepticism, and feebleness of social will. While science is gathering its data, superstition serves to check the destructive effects of selfish cunning. Such beliefs as make toward this end are preserved, because the society that holds them endures.

(4) Instruction in traditions, etc. Its growth into the school

The ordeals, the drill, and the initiatory rites, used by primitive men as an adolescent discipline, an introduction to citizenship, are naturally associated with the fourth phase of such culture, the instruction in tribal traditions, religious beliefs,

laws, and customs. This factor, at first not a distinct element, gradually expands in amount as tradition and law develop. Even with men accounted savage, it may occupy months of training. So great a quantity of material for instruction is eventually collected that the preservation and continuation of it comes to constitute the principal if not the sole duty of a priestly or learned class. Many beliefs become esoteric, simply because the mass of the people have not time to acquire them, or special training or intelligence enough to understand them. Such conditions were typified among the Egyptians, Hindoos, Babylonians, Hebrews, and Peruvians. Indeed, this stage in social evolution is practically universal. Especially is it almost certain to result from the development of a written language, the first uses of which are invariably connected with law, religion, and tradition. Here, then, we have the adolescent training expanding into priestly education, and involving a school, the simplest function of which is training in literacy.

The school the outcome of conscious socialization

The school, therefore, may be said to evolve out of the conscious attempt to educate the young. As an institution of society distinct from the family, it finds its function in the endeavor to socialize its people. The family remains in its educative activity primarily interested in the welfare of the child, and only in a secondary way does it concern itself with the improvement of the collective welfare. On the other hand, society first becomes interested in education, not because it wishes to promote the interests of the individual who is to be trained, but because it desires to strengthen itself in the struggle for self-preservation, or in carrying out the enterprises dear to the heart of the community as a whole or, at any rate, of those who control it.

ummary

Thus the conscious education of society first reaches clear expression in the exercises of adolescence. The purpose of these exercises is primarily, one may say solely, that of social-

ization. They are to train in habits and ideals that make for the welfare of the group of the initiated even though they involve the sacrifice of the individual. In this work, religion, even in the form of superstition, is of the greatest importance, for by it the belief in the supernatural is rallied to the rescue of society. Thus reason and imagination create beliefs that strengthen social organization in spite of the disintegrating influence of intelligence when in the service of self-interest. Because of this check to the disruptive actions that spring from selfish cunning or the vagaries of reason in the individual, natural selection, usually operative in the interest of social solidarity, is enabled to encourage also the growth of rationality.

Conscious social education is evidently far more flexible than the unconscious training of imitation, for it is of the essence of consciousness to discriminate and hence to present alternatives to conduct. To educate consciously means to entertain the idea of no education or of a different education. It means to open the door to change and to readjustment, by providing, on the one hand, increased sensitiveness to disadvantageous educational conditions and, on the other, increased resources for change in the way of suggestions as to possible methods of doing things. Against the anarchic effects of such flexibility we find, as we have seen, arrayed the force of ethico-religious adolescent culture.

The tyranny of such culture brings with it the tyranny of civilization. The "state of nature" of which Rousseau dreamed is, in truth, a state of freedom from institutional tyranny, — if, indeed, we can anywhere find men so primitive that they have no institutions. Rousseau is right also in regarding institutional tyranny as the outgrowth of education. Social control in its most effective forms is the child of conscious education and of the school. Thus the fundamental problem of

political history is bound up with the evolution of conscious education.

Section 14. *Education and social control*

Purposes of education for social control

The evolution of conscious education involves the transfer of social heredity and of social control into the hands of human intelligence and will. They, therefore, come under the sway of purposes. We may distinguish three purposes that enter in to determine the nature of education for social control. These are (1) the aim of promoting the welfare of the children who are trained; (2) that of fostering society and social welfare; (3) that of exploiting individuals or social groups in the interest of those who control the mechanism of education.

Instincts back of social heredity

It is interesting to note that this last purpose is, like the others, grounded in instinct. The advent of consciousness merely furthers the tendencies that nature has implanted in us. If we were to pass in review the instinctive tendencies that lie back of education through social intercourse, we should find the following list to cover fairly well the ground: (1) the instinct to seek the society of one's kind, or sociability; (2) the instinct to coöperate in specific ways with some and to antagonize others; (3) the imitative and sympathetic instincts; (4) the parental instinct; (5) the instinct to seek approval; (6) the instinct to control.

(1) Those favoring passive transmission

Sociability is intimately bound up with that "consciousness of kind" which Professor Giddings[1] regards as so fundamental a fact in social life. The instincts of coöperation and rivalry lead to a great variety of specific acts, such as are involved in coöperation in the storing of food, in defense against enemies, in the posting of sentinels, in the building of homes, in the pursuit of prey, in migration, etc. These combine with sociability to provide a constancy of intercourse greatly favorable

[1] Compare *Principles of Sociology.*

to the transmission of social heredity. The imitative and sympathetic instincts go hand in hand, inasmuch as sympathy is furthered by the tendency to imitate the expressions of emotion. On the James-Lange theory of emotion such imitation must result in the development on the part of the imitator of some measure of the emotion felt by the one who is imitated. Thus imitation makes for common feeling. Sympathy is not, however, by any means entirely dependent on imitation. The sight of others the situation or the expressions of whom suggest feeling or desire of any sort is wont in sympathetic people immediately to stir similar feelings. It is to be noted that while sympathy, by transferring to one the feelings of another, causes them to act somewhat alike, it does not by that fact cause the sympathetic one to help the other. Sympathy alone leads us to avoid the sight of suffering rather than to go to its assistance. Hence, while it furthers coöperation and sociability, it is not equivalent to these.

(2) Those favoring active transmission

Sociability, coöperation, imitation, and sympathy favor the passive, unconscious transmission of social heredity. On the other hand, the parental instinct, the instinct to seek approval, and the instinct to control may each involve forms of the genuine active instinct to teach. The parental instinct leads, as we have seen, first to the prolongation of the companionship of the elders for the sake of the educative effect of their example, then to the instinct to thrust the young on their own resources when proper occasions appear, and finally to the active seeking or artificial creation of such occasions. The last step carries us into the region of human, consciously controlled education.

The instinct of parental training spreads by imitation and sympathy, and becomes a general attitude of society toward the rising generation. It gains powerful assistance from the inborn impulse on the part of human beings to gain recognition for themselves and their ideas, not only from others of their

own age, but also from children, where, perhaps, it may more easily be won. Finally, the instinct to control, to domineer, to exploit, appears to drive its possessor to make use of the tremendous engine of culture in the interest of his own individual caprices or ideals, or of his personal security, ease, and comfort.

Social value of the instinct to exploit

In the history of mankind it is often difficult to determine the extent to which the enterprises of leaders are dominated by altruistic interest in the welfare of society or by the instinct to exploit. A leader who creates or controls a mechanism of education by which a social group is made strong usually brings about, not only an increase in social welfare, but also enhanced prosperity for himself. Even though in his self-denial he refuses to take advantage of his power to add to wealth or purely personal goods, he cannot rid himself of his authority or of his prestige. He has identified himself with his social group as a whole, and its welfare becomes in a peculiarly intimate sense that of himself. It is not that he is conceived justly to charge from the community that has profited by his organizing power a commission for his services, but rather that socializing education has trained all men to think of the welfare of the state as the thing that overshadows every individual interest, and that the leader or governing class symbolizes this community prosperity and, indeed, the community itself. In an age when the materials for scientific criticism of government are few, and when natural selection works fiercely to weed out those social groups with less effective organization or less vigorous loyalty thereto, it is likely that men who are governed almost entirely by the instinct of exploitation may do society its greatest service.

Exploitation as a phase of social progress

As a matter of fact there can be little doubt that, however important it may be to-day for society to get rid of the use of the machinery of social control for the sake of exploitation,

this practice has constituted an integral and necessary phase of human progress in the past. Exploitation has not only served the interests of those who govern, but it has as a rule benefited the governed as well, and in the long run has served as a means of promoting human progress into a truly democratic age. Slavery may often be preferable to a state of nature, so far as the security of life is concerned. Domestication has for the lower animals its disadvantages. It is, however, the price that many pay to avoid extermination. But the greatest gains that spring from this stage of social evolution accrue to civilization in general. They come through the intellectual, social, and æsthetic advances that the governing class is enabled to make from the leisure that it obtains through the system of exploitation. This matter, so important in the evolution of culture, will be discussed more fully later.

Exploitation in primitive education

The ethico-religious culture, which constitutes, as we have seen, practically the sole educational interest of general society at the dawn of conscious education, drifts naturally into an agency for exploitation. This process may take place along two lines. Leaders or governing classes may spring up within a social group, or a governing class may be created by the conquest and subordination of one tribe or race by another. In both cases the rôle of socializing education is dominant. Such education may spring from the accumulated suggestions of men who are by nature endowed with much of the instinct to control, but the preservation of the material depends largely upon its service to the general efficiency of the tribe.

Once brought into existence, the material of adolescent culture lends itself to the creation and perpetuation of a system of leaders. The initiated, by virtue of the strength of their social organization, the secrecy and mystery of their common rites, the superstitions that surround and sanction their customs, are enabled to exercise an extraordinary author-

(1) Of women by men

ity over the uninitiated. From the very beginning women have been as a rule excluded from the secret tribal society. Thus, while they may have an adolescent training of their own, the more powerful organizations of the men become an effective agency to enhance the dominance of the male sex.[1] It is likely that the superior strength of the male society is due to several reasons, among which we may note first, the fact that the principal service of the social training which such societies involve is to promote efficiency in war, an occupation not practiced extensively by women, and second, the fact that they tend to run counter to the extreme instinctive partiality of women for their own children.

Thus in its earlier stages adolescent initiatory education tends to become an agency for the control and, indeed, the exploitation of women, inspiring in them fear and mysterious reverence, compelling them to yield up their children, and reducing them to a kind of slavery, so far as regards the drudgery of the economic life. In yet another way such training, even while it remains the common heritage of all the males of the tribe, becomes an agency for the exploitation of some

(2) Of younger by older men

in the interest of others. Inasmuch as its nature is largely a matter of tradition, its control falls into the hands of the elders, who are thus enabled to assume a position of great authority, and in fact render the younger man quite subservient to them. Thus they are able to substitute for the neglect and the privations that the decay of old age naturally brings to those dwelling in a state of nature a life of great honor and comparative ease.[2] Whatever they wish they can obtain through the superstitious respect that their supposed supernatural powers causes them to inspire. They may even monopolize the younger and more attractive women of the tribe,

[1] Compare Webster, *Primitive Secret Societies.*

[2] Compare *ibid.*, p. 60.

leaving the young men to go without wives or to select them from those whom the elders do not desire.

(3) Of a governed by a governing class

The exploitation of women by men and that of the younger men by the elders do not exhaust the possibilities of the adolescent culture as a source of power and privilege. In a general way, the honor which the initiated enjoy depends on their success in the ordeal. Thus the initiatory exercise naturally results in a rough differentiation into leaders and subordinates. This differentiation may be further developed by the growth of the tribal society in two directions. The process of initiation may be expanded, and various grades may appear between the first exercise and final admission into the inner circle of the elect, who really control the society.[1] Again, the conditions of initiation may be such as to exclude many, perhaps all but a few, from entering the society. In both cases the institution tends toward the limitation of the authority and advantage that springs from a control of the adolescent culture to a few. It tends to differentiate the tribe into a governing and a governed class.

Rise of aristocratic culture. First phase: restriction of membership in a dominant tribal society

In the further evolution of the tribal society this distinction may become more and more manifest. The determination of those who shall monopolize the machinery of social control may come to depend on wealth or on heredity or on both, instead of upon the inherent quality of the initiates. Under such conditions the tribal society may come to bridge the gap between primitive democracy and genuine aristocratic or monarchical institutions. The ethico-religious culture may thereupon gradually cease to be the peculiar initiation into a powerful and privileged society, and become a training of general custom, that serves to maintain the social control of the dominant classes. In that event, the machinery of the earlier institution may still be preserved, either as a mere formal

[1] Compare *ibid.*, Ch. VI.

survival or as a contribution to the forces of conservatism in maintaining the established order.

Second phase: conquest of a people by another having a superior culture

In the complete evolution of the aristocratic or monarchical state, however, the second method of transformation above alluded to is, doubtless, an usual if not a necessary phase. One tribe with a superior social heredity, so far as war is concerned, conquers and reduces to subjection another. In this struggle it is evident that efficiency depends to a great extent upon social solidarity and so upon such adolescent culture as we have been considering. Originally the result of such conflicts was the annihilation of the defeated group. With developing intelligence slavery or some other form of exploitation is substituted for extermination. Society is thus broken into the governing and the governed caste. Each maintains to some extent its own educational traditions and methods.[1] However, there are modifications. The subjugated caste retains just that ethical training that makes it subservient. Only when its culture lends itself to this change can it escape extinction. The ruling caste emphasizes more and more the social discipline that makes it a coherent and efficient force in war, yet couples this subservience to its own standards with the arrogance of leaders toward the conquered caste.

Survivals of primitive adolescent culture

The methods and ideas of these early systems of socializing culture survive in many of the institutions of to-day. We still have adolescent military drill; we have secret societies, and the time for joining them as for entering the church is that of early manhood. The Greeks had the manhood examination; we have the period of assuming the civil and political rights of the adult. Chinese education is practically an expansion of the manhood examination. Originally military in character, it expanded to concern the so-called "six arts," — music, archery, horsemanship, writing, and the rites and ceremonies of public

[1] Compare Gumplowicz, *Der Rassenkampf*.

and social life. Here we find a caste education that aimed, in part at least, at the exploitation of the lower classes. The later democratic movements in China involved the reduction of the military element to a mere form, and the development of the official system of morality and custom known as Confucianism. This is founded on literary and ethical education, the aim of which is to fit the student for office. His success therein is tested by a series of examinations conducted by the state, and the passing of each successive ordeal either brings the student nearer to an official position, or entitles him to one better than he holds. In India the caste system of education is intact and intrenched. The Persians and Spartans illustrated the preservation by superior military training of the supremacy of a conquering caste over a numerically superior tributary one.

Practical value of education in social control

We have seen that recapitulatory education amounts to little until it takes the form of social heredity. We may add that the principal function of social heredity is to further social life; that is, to socialize the young. This is true even of the unreflective education of imitation and instinct. The acquired characters which each generation of a species needs to relearn consist very largely of methods of dealing with their own kind and with other kinds. By the time social heredity has evolved to constitute an important factor in the equipment of the young, the social environment has evolved into such proportions and such complexity as to afford in its coöperations and competitions the principal problems of readjustment. When conscious, social education appears, it devotes itself, as we have seen, almost solely to the business of socialization. Even in the hands of the family its primary object is to train the children to obey, to coöperate, and finally to lead. The art of social life is thus the oldest of the arts, the first to emerge from the rank of an instinct into that of consciously controlled devices. Religion, ethics, the science and art of social control

are the fields into which all save an almost insignificant part of human thought has gone throughout the ages. The art of getting on has summed itself up in a study of ways of pleasing or exploiting society.

Society furnishes a medium in which the aims of the individual are all accomplished indirectly. It does for him what he wants in proportion as he succeeds in pleasing or coercing it. Social control is, however, not in the last analysis ever a matter of physical force, but rather of management, of manipulation of the forces that influence the wills of men. The struggle for existence in society is a struggle to influence one's fellows. It is a struggle for recognition, in which conquest comes primarily through conformity to the conditions and the standards of the social will. Thus the natural struggle for existence ceases to have the character and the results that appear in the state of nature. Society is made strong by self-sacrifice. Hence it encourages the development of this quality, and the protection of the weak and the unfit. Its fundamental law is the golden rule, and whether the individual be penetrated with altruism or be purely selfish, he can gain his ends only by pursuing the way of social service, at least in form. The struggle for existence in society may in fact result in the destruction rather than in the survival of the fit. The physically perfect, the brave, the efficient are called upon to serve in the armies and at the front. They perish, while those who are unfit for such duties survive to maintain the race. President Jordan has emphasized these negative effects of selection in society.[1] There can be little doubt that the type of manhood has in many communities degenerated because of long and bloody wars. What to natural man may be a condition of rapid evolution, may to civilized man be an occasion for the reversal of this process. Moreover, society, not content with

Rise of the struggle to conform

[1] *The Blood of the Nation.*

thrusting into the post of danger its best blood, strives by its artificial system of charity to preserve pauper and criminal, feeble-minded and insane.

Social warfare on natural selection

Thus society wars upon the principle of natural selection, by the agency of which our fine physiological inheritance has been sifted out. Although it is probable that we need not fear racial degeneration as a result of our ethics, nevertheless it does seem not at all unlikely that the advance of the race physiologically will be more and more interfered with, if not positively checked. The average intelligence of the freeman in ancient Athens will, doubtless, never be surpassed in any future community, if, indeed, it be equaled. However, it does not follow from the slackening of progress in respect to physiological heredity that the advance of society is threatened. Nature shuts off each generation from tinkering easily and at random with physiological heredity by providing no means for inheriting acquired characters. The ethics of society still further safeguards the stock against change, especially change in the direction of powers to be used only in the service of self. Nevertheless, in both cases the stability of physiological heredity is more than made up by the flexibility of social heredity.

Progress by the improvement of social heredity

Progress ceases to be by the selection of men, and comes to be by the selection of habits, ideals, institutions, cultures. Thus the destiny of the race is taken out of the hands of the butcher and placed in the care of the social reformer, whose work can be carried on without violation of ethics, and, indeed, in the spirit of charity and good will toward all.

It is not meant that the processes by which the unfit are eliminated have in civilized society ceased. Disease destroys individuals and families. Poverty fosters disease. Sexual selection leaves many of the inefficient or abnormal without mates and offspring. Society in many ways wars upon the non-social and discourages the continuance of traits that either

negatively, like indolence or inefficiency, are a burden upon it, or positively, like immorality or the predatory spirit, threaten its disruption. Nevertheless, it seems clear that the responsibility for progress has been shifted from the germ plasm and placed upon culture. Many anthropologists are inclined to think that the differences between primitive and civilized men of to-day are mainly due to nurture, and that in nature the races of mankind are after all gifted with much the same capacities.[1]

Consequent increase in the rapidity of readjustment

The shifting of the battle ground of progress from physiological to social heredity, from nature to nurture, has brought with it two great advances. In the first place, and from the formal point of view, there has been that large gain in adjustability, in flexibility, in progressiveness that we have so much emphasized. The evolution of life is in this respect like the movement of a stream that begins as a glacier. Imperceptibly the gathering snows are packed into masses that begin to creep down the mountain side. But the progress of the glacier is, because of its inflexibility, marked by extreme slowness and by terrible struggle, the signs of which are the crevasses, the scoriations, the moraines. When, however, it reaches the region of temperate heat, it melts, and for the rest of the course its advance is swift, fluid, conforming with the greatest ease to the irregularities of its bed. But with all its fluidity of adjustment, we must remember that the foundation of the life of the higher species lies in a physiological heredity that seems to share somewhat in the permanence of immortality.

Transformation of recapitulatory into rational education

In the second place, and from the point of view of content, capacity for readjustment, for education, for social inheritance, leads into consciousness, intelligence, morality, self-control, responsibility. When these factors once become clearly effective in the life of mankind, education advances into a third stage in its development. In assuming the function of trans-

[1] Compare Rätzel, *History of Mankind*, Book I, § 3.

mitting the acquired characters it became, as we saw,[1] a conservative agency. But when such recapitulatory education is taken more and more under the control of consciousness, as an agency to bring about the realization of purposes, we find that it loses its mechanical character and becomes more ideal. Men learn the power of education as a force for social control. They realize that future society will be what present education makes it. Above all, the exercise of intelligence makes them aware of the fact of progress, and the importance of education as an aid thereto. Under such control education becomes rational, progressive, ideal. Its motto is no longer "what was good enough for me is good enough for my children." It becomes, "my children must have better advantages than I enjoyed." Thus the conservatism of recapitulatory education is gradually replaced by the progressiveness of the education of the reason, that aims not so much to adjust as to equip for readjustment. The discussion of the foundations of such education will constitute the main theme of the second part of our subject.

Summary

With the growth of consciousness regarding the consequences of education, then, the amount of training that can be obtained from the exercise of the instincts of sociability, imitation and sympathy, coöperation and hostility, or even from the more active instincts back of teaching, — namely, the parental instinct, the instinct to seek approval and the instinct to control, — is enormously expanded. Especially do men educate in the hope better to realize the instinct to control, and we find that the exercises of adolescence evolve into elaborate and cunning devices for the exploitation as well as for the betterment of society. Women are exploited by men, the young by the old, and privileged classes may appear, either by the monopolization of the control of culture by a few, or by the subju-

[1] Compare § 10.

gation of a people with one culture by a community having another which is more efficient for the purpose of war. Such exploitation is not entirely an evil in its day and generation. It may mean efficient organization for war or peace, protection in lieu of extermination, for which tribute or service is exacted, or a stable government with effective machinery for justice. In the long run it means the evolution of the arts of civilization, which are to a great extent a product of the patronage of the leisure class.

By the time social heredity has come to assume considerable importance among the processes of life, the social environment attains the position of being the medium through which most of the adjustments of life are made. With man in civilized society, nearly all that is done involves the utilization of the social machinery. Thus education comes in a double sense to be for social control. On the one hand, it aims to socialize men, to bring them under the sway of common ideals and customs, perhaps to exploit them; on the other, it aims to train them to make use of the social machinery, to know how to get on in society, to please, to coöperate, to lead, to exploit. Throughout the earlier history of civilization the concern that monopolizes almost all the interest of education is the art of social management. In socializing men, education interferes with the operation of the principle of natural selection by exploiting the strong and protecting the weak, by teaching the golden rule and the principle of self-sacrifice for the sake of others. Thus evolution in regard to physiological heredity is checked. However, progress by the improvement of social heredity takes its place, and this process can be brought under the control of the ideals of reason and conscience. The control of reason is favorable to far more rapid change; that of conscience puts the destiny of man in the hands of his own ideals. Thus rational or ideal education takes the place of the blind drift ahead or of mere recapitulation.

PART II

THE PROCESS OF EDUCATION IN THE INDIVIDUAL

CHAPTER V

THE CONDITIONS OF INDIVIDUAL DEVELOPMENT

SECTION 15. *The problem of individual development*

Problem of Part I;

IN Part I an attempt has been made to determine the general function of education as a factor in organic and especially in social evolution. Put simply, organic evolution is a history of the development of adjustability, of capacity for education. We have seen how difficulties in the way of continuous individual readjustment, together with the need of combining a high degree of adaptability in some respects and great racial stability in others, has resulted in the functions of reproduction and heredity, the differentiation of heredity from education, the non-inheritance of acquired characters, the life cycle beginning with infancy, recapitulatory education, social heredity, and the development of consciousness and conscious control.

of Part II

So far the problem that has so constantly confronted us has been that of racial adaptation, racial readjustment and evolution. Now we may turn to the more minute analysis of the problem of education as a matter of the development of the individual. We have to consider the factors and the methods that appear in the maturation and adjustment of the child of an enlightened race. The importance of consciousness in the process causes the issues involved to be largely questions of psychology. However, their discussion will constantly lead back to the question of general organic and social evolution, the treatment of which not only furnishes the foundation for

the analysis of the process of individual development, but is itself in turn dependent upon this.

Four problems concerning individual development

The problem of individual development presents four large problems, the treatment of each of which yields certain general principles that it will be well to have clearly in mind throughout the following discussions. These problems are: first, that of the hereditary equipment on the basis of which all individual development proceeds; second, that of the relation between such development and the general process of experimentation and selection; third, the relation between development and consciousness; and fourth, the relation of development to habit.

Section 16. *Heredity and individual development*

Dependence of capacity for education on heredity

The development of the individual is often ascribed to heredity and education. In fact, since, as we saw in an earlier section,[1] education is dependent upon an hereditary basis, the entire process of individual development is limited both in scope and direction by that which comes from nature. We distinguished four factors in the capacity to learn: (1) the instincts; (2) the action system; (3) sensitivity to lack of adjustment; (4) ability to utilize the resources of the action system in new emergencies. Each of these is a gift of heredity. If it be objected that these factors are concerned only in behavior, while learning concerns consciousness as well as physical activity, we may reply that consciousness is always intimately associated with bodily movement.

It follows that the development of each individual, including the things that he can learn, is limited, and to a considerable extent specialized. We differ from each other both in

[1] Compare § 9.

general power and in the lines along which we are capable of learning.

"The action system of an organism determines to a considerable extent the way in which it shall behave under given external conditions. Under the same conditions organisms of different action systems must behave differently, for to any stimulus the response must be by some component of the action system." [1]

Progress in flexibility, in intelligence, has meant a growth in the direction of power to do any unexpected thing, as against power to meet certain special situations, yet it is evident that in the most intelligent beings capacity to learn is limited by the range of the action system.

"Man is no more regulated by pure reason than animals by pure instinct. The basis of human conduct is hereditary character; the hereditary tendency to feel, to think, to act in a determinate manner. Properly considered the impulse to reason is itself an instinct; and the methods by which we reason, the 'laws of thought,' are in the first place inherited methods of reaction to the appropriate objects. They are indeed improved and refined under the guidance of experience and reflection, but in this respect their history is quite parallel to that of the humbler instincts of animal life." [2]

Hereditary basis of specific mental powers

Not only is intelligence based on instinct and limited to the recombination of inherited modes of reaction, but also the power to think may be very considerable in some directions where instinctive action is well developed, while in others, foreign to the instincts of the animal, it may be very slight.

"Intelligence, we shall recognize, develops in different forms and in diverse directions. It originates within the sphere of instinct, and in its earlier stages is shaped by the instinct which

[1] Jennings, *Behavior of the Lower Organisms*, p. 300.
[2] Hobhouse, *Mind in Evolution*, p. 318.

it subserves and expands. We must not expect dog intelligence to be quite the same thing as cat intelligence or ape intelligence. It is not only a question of difference in degree, but also, in a sense, of difference in quality arising from difference in origin. Among men we know that A, who is clever at language, is incredibly stupid in mathematics, while with B it is just the opposite. So, a dog may show not merely a highly developed hunting instinct, but real cleverness in the adaptation of past experiences, when it is a question of catching a hare, but he may also be an intolerable dullard when it comes to opening a box." [1]

Social heredity as a condition of learning

The action system by which the learning of civilized man is circumscribed includes, we should remember, not only the specific muscular movements and coördinations of movement possible to him, but those instrumentalities that society has developed for the use of the individual. We have tools, clothing, fire, houses, domestic animals, machinery, wealth. We have language, institutions, law, philosophy, science. These expansions of our action system are our social heredity. It is founded on the power to learn that comes to us through physiological heredity, but it is, nevertheless, an expansion of this. So extensive is the superstructure of social heredity that it dwarfs and almost hides its supporting instincts.

"In fine, in the highest animal species, instinct lays the ground plan of conduct within which details may be remodeled by individual experience. In the human species, the ground plan is itself reconstituted by the organized experience of the race." [2]

The flexibility of social heredity has been in the preceding pages repeatedly emphasized. Yet however easily modified, it determines the lines of development of the individual as positively as does the physiological inheritance. We are children of our age as well as of our blood. It can, then, be

[1] Hobhouse, *Mind in Evolution*, p. 264. [2] *Ibid.*, p. 320.

laid down as an universal proposition that one's power to learn is fixed by heredity and expressed in his action system. It will be necessary later on to expand further the conception of the action system in order to include and to provide for conscious readjustment, but we shall find that this extension will not affect its fundamental relation to physiological and social heredity. The action system grows as does heredity, by virtue of that inner potentiality of growth which furnishes the material for all readjustment.[1] Whether or not its earlier evolution in physiological heredity is governed by a principle of "orthogenesis," it would seem that the later development of social heredity under the control of intelligence and will would manifest clearly the tendency toward the ideal. However, the difference is probably not fundamental, but due rather to the greater ease with which variations not orthogenetic are eliminated under the régime of conscious evolution.

Recapitulation of racial in individual development

One other point of great educational importance should be mentioned before we leave the subject of the hereditary basis of individual development. The elements of this inheritance are not, as we have seen, all transmitted to the child at birth.[2] This fact is almost as obvious of physiological as of social heredity. But it is not so evident that the order of development of these powers in the individual follows to a considerable extent that of their evolution in the history of the race. This parallelism between the ontogenetic and the phylogenetic series has been and still is made much of in educational theory. From the point of view of the present discussion it may be stated as follows: the action system of the individual tends to expand in the same way that it developed in the history of the race. The extent to which this conception of recapitulation and the educational practices based thereon are valid will constitute the subject of the following chapter.

[1] Compare § 9.

[2] Compare § 7.

Summary

We may sum up the section by reaffirming the principle that individual development is determined by heredity. This follows of necessity because of the limitation of the possibilities of modification by education to the resources of an action system that comes through either physiological or social inheritance. We readjust ourselves through the materials that come to us from the ages of organic and social evolution. These resources, to a considerable extent at least, become available in the individual in the order in which they appear in the race.

Section 17. *Experimentation and selection*

Three phases of development by experimentation and selection

In a general way, it may be said that the formula "experimentation (or variation) and selection" covers all readjustment, whether in the individual or in the race. Three distinct phases of the exemplification of this principle may be discerned. These are: (1) racial evolution by variation and selection; (2) individual development by "trial and error"; (3) individual development by conscious or ideational readjustment.

The first two of these processes have been already much discussed. The method of learning by "trial and error" is essentially that method the factors in which are described in the section on "heredity as a basis for education."[1] It demands on the part of the individual that learns a certain sensitivity to lack of adjustment and a power to utilize other than hereditarily preferred responses in the endeavor to meet this situation. The process of learning is stimulated by the sense of dissatisfaction, which immediately results in the inhibition of existing impulses and the initiation of diffused activities. Such of these as are useless or injurious are inhibited and eliminated. If any succeed in removing the source of the dissatis-

[1] § 9.

faction, it is repeated, and a new association is formed, making it the preferred reaction to the given situation.

Learning by trial and error compared with racial readjustment in (1) character of the experiments

When we compare individual readjustment by trial and error with racial readjustment through variation and selection, we notice an important contrast both in the materials for experimentation and in the nature of the selection. In the case of racial evolution the experiments are individuals who vary from each other. The selection is done by the physical influence of nature, destroying all who do not succeed in conforming to the conditions of life. If the organism fits, all is well, but failure involves no reaction in the effort to better itself. Such a reaction would illustrate individual rather than racial readjustment. To be a true case of the latter, each new experiment must be a new individual, springing from a varying fragment of the germ plasm.

On the other hand, in learning by "trial and error," the experiments are not individuals, but impulses, activities. The resources for learning are not potentialities for variation in germinal cells, but the action system of a differentiated body. Such materials are both specialized and capable of being brought into action quickly through the associating power of the central nervous system. Individual readjustment demands effective action speedily; otherwise the time for learning is past, the organism has perished, and the work of readjustment must be left to the race, in the experiment of some other individual. The action system, in order to be so quickly utilized, must consist of fairly mature types of reaction, or such as can be quickly matured. It is not primitive, undifferentiated, but complex, specialized, and at the immediate beck of a nervous system delicately sensitive to the needs of life.

(2) method of selection

Just as learning when compared with racial readaptation involves a change in the materials for experimentation, so it depends upon a new method of selection. The individual must

assume for itself this function. It must anticipate the destructive action of the environment. Instead of waiting for nature to settle the question as to whether or not the experimental variation is desirable, by favoring or killing the experimenter, the sense of dissatisfaction or contentment must judge the efficiency of the various reactions. Thus we have, instead of direct natural selection, symbolic individual selection. It is interesting to note that, unlike natural selection, this symbolic selection does not destroy the impulses that it inhibits, but simply puts them in abeyance, to be resuscitated should an emergency serious enough arise.

Thus trial-and-error learning introduces us to one phase of the inner subjective life, that form of consciousness which is usually called affective. From its function we might well call such consciousness selective, *yes* or *no* consciousness, as contrasted with cognition, which is descriptive. Affective consciousness symbolizes the favor or the menace of the environment, thus enabling us to change our ways before it is too late. Some have wondered why we should so generally feel pleasure in what is good for us and dissatisfaction in the injurious, and they have tried to explain the matter by reflecting that natural selection would have eliminated all who felt otherwise. This is only half the truth. Affective consciousness develops, not merely in such a way as to do us no harm, but rather as a fundamentally important asset of life. It is that without which learning would be impossible.

We have spoken of affective consciousness as symbolic of the selective agency of the environment. This does not in the least imply any clear consciousness of this symbolism. One feels his way toward the prudent, but does not *know* the reasons that make his course so wise. So disguised is this symbolism that ethical schools have sprung up, maintaining, on the one hand, that pleasure and pain are the sole good and

evil in life, and, on the other, that they have no relation to either good or evil, and should be utterly disregarded by those in search of the true values of life. Both schools are equally regardless of the function or utility of feeling.

Nature of these factors in conscious learning

The principle of experimentation and selection manifests itself in yet a third way, as the form of conscious learning. In the case of learning by trial and error the experiments are actual reactions of the body; the selection alone is symbolic, subjective. When we come to conscious learning, however, we find that the experiments themselves have changed. They are not movements, but rather ideas of movements. The inner world has come to symbolize, not only the selective agency of the environment, but also the specific conditions and results associated with our activity therein. We are able to represent or anticipate in detail the consequences of following certain impulses. Cognitive or descriptive consciousness has appeared. Thus the interplay of experimentation and selection becomes wholly a mimic struggle, fought out in the arena of the mind. Instead of acting we think of acting, and, summoning into the mind the consequences that will follow such a course, are enabled to tell beforehand what we should do, without the wear and tear of actual experimentation. Such learning may be called ideational readjustment, inasmuch as it goes on in idea.

To have conscious learning the action system must expand to include ideas descriptive of the conditions and results of action. Such ideas are an outcome of conscious memory. They can be acquired only as a result of actual experimentation. We may call them experience. The gathering of experience is the function of the cerebral hemispheres. This is not their primary, but rather their secondary function. Primarily, as we have seen,[1] the hemispheres furnish a complex

Primary and secondary functions of the cerebrum

[1] Compare § 7.

mass of interconnections in which hereditary preferences are largely wanting. Thus cerebral control means ready diffusion of impulses and corresponding facility in readjustment. In this way learning by trial and error becomes easy. With the growth of the power to be affected by the conditions associated with activity so as to retain a symbolic account of experimentation, the brain gains its secondary function, — a function that, one might say, ultimately overshadows the primary use.

The development of cognitive consciousness and of ideational readjustment involves a change in the selective principle as well as in the material for experimentation. Feeling becomes reënforced by cognition and develops into judgment. The details of this transition and of various important phases in the evolution of ideational readjustment will be dealt with in later chapters.

Summary

Experimentation and selection may, then, be said to constitute the general form of readjustment. In racial evolution the experiments are individuals, who represent variations from the norm of the stock. Selection is here the natural or eliminative selection of the environment. In individual development the process of experimentation and selection assumes two phases. The first is that of learning by trial and error, where the experiments represent reactions drawn from the resources of a differentiated action system, and the selection is by the inhibitive or favoring effect of affective consciousness. Here the inner, symbolic life first manifests itself, in representing the selective influence of the environment. With the development of conscious memory and experience, the action system is supplemented by the addition of many ideas in regard to action. Thus the inner life is equipped not only with the power of selection, but also with plans which furnish the material for ideational readjustment, and learning becomes

conscious, symbolic, anticipatory of the physical movements of readjustment, and so facilitating to a remarkable degree this process.

Section 18. *Consciousness and readjustment*

Primary function of consciousness

The fundamental relation of consciousness to readjustment was indicated in the last section. It anticipates actual by ideational readjustment. Thus learning is made quicker, easier, and less dangerous, and its possibilities are very greatly increased. We learn more quickly because thought can hasten more speedily in its anticipation of the results of action than movement in the realization of these consequences. We gain the ease and safety of mere reflection in place of the effort and the risk of actual trial. Finally, through its powers of analysis and synthesis, thought is able to coördinate very complex movements that otherwise would be impossible. Thus the resources of action are enormously enhanced. Very many activities are brought into interplay, and long-continued series of movements are integrated through the power of consciousness to review quickly the various factors involved, and to push through in an economic way the organization of a comprehensive plan. These advantages will be illustrated in greater detail later.

Three implications as to its nature: (1) Its impulsive character

We may say, then, that the primary function of consciousness is to facilitate readjustment. Three subordinate principles may be stated to emphasize phases of this fundamental relation. The first of these is that all consciousness is motor. Learning is, as was suggested in an earlier section,[1] always learning to do. Professor Baldwin calls this principle the "law of dynamogenesis,"[2] and Professor James makes it one of the "working hypotheses" upon which psychology proceeds.[3]

[1] § 16.

[2] *Mental Development, Methods and Processes*, p. 165.

[3] *Principles of Psychology*, Ch. I.

The principle seems to follow as a natural consequence of the structure of the nervous system, where all paths lead to the muscles. This is true even of the complicated fibers in the cerebral hemispheres, for these ultimately land the currents they bear in the motor areas. It is true that ordinary observation seems to furnish us with cases where men think but do not act. However, minute experimentation invariably reveals some physical expression in eye movements, muscular tension, change in circulation, or the like.

(2) Its dependence on emergencies

A second subordinate principle is that consciousness occurs only when readjustment of some sort is necessary. With many psychologists the criterion of consciousness in the lower animals is their power to learn. This is the view of Spencer, Bain, Romanes, Royce, Baldwin, and others too numerous to mention. The newer school of so-called "functional" psychologists reëmphasizes this point, declaring that consciousness is what it does, and that, in consequence, it never appears except as it functions in readjustment.

"A closer inspection of the situation will suggest to us the generalization, which is undoubtedly correct, that we shall find consciousness appearing at those points where there is incapacity on the part of the purely physiological mechanism to cope with the demands of the surroundings. If the reflexes and the automatic acts were wholly competent to steer the organism throughout its course, there is no reason to suppose consciousness would ever put in an appearance. Certainly we never find it intruding itself where these conditions are observed, except in pathological instances." [1]

(3) Critical character of the factors that it represents

The third principle may be immediately derived from this. As consciousness is always the outgrowth of disturbances in activities that up to that time were performed instinctively, so it consists in a gradual process of representing in idea the

[1] Angell, *Psychology*, p. 50.

essential features of the situations where things are going wrong. The preliminary step in this process is inhibition. Inhibition provides the opportunity for the growth and the utilization of ideational or reflective experimentation, — if you will, deliberation. Consciousness evolves as a symbolism, representing such features of the situation and of the experimental efforts to solve it as prove most valuable in leading to effective action. It is always at the critical point in the struggle for readjustment, and its view is either wholly or for the time limited to attending to such factors in the situations with which it deals as must be distinguished in order that the appropriate reactions may be applied to them.

Consciousness, therefore, may be conceived as largely concerned in rendering intelligent actions that at first were unconsciously performed. Thus the transition from instinct to reason seems like one from an unconscious to a conscious teleology. The mind fathoms the mechanism by which the individual gains his ends, in order to improve it in this or that detail. As this process of taking under control the functions goes on, consciousness attends first to the matters that are more immediate. It learns how to do things before it learns why they are done. Subsequent mental development proceeds in two directions. On the one hand, it goes from the consciousness of the end immediately to be gained to more and more remote ends, thus unraveling the teleology of its being. On the other hand, it analyzes each activity into the elements of which it is composed, thereby approaching more nearly to a comprehension of the physical and physiological and even the psychological mechanism upon which its effectiveness depends. Both kinds of knowledge, normative and natural, knowledge of values and of agencies, of final and of efficient causes, are indispensable to a complete and satisfactory adjustment.

Two directions in which consciousness develops

Social heredity presents to consciousness the same problem of reconstruction as does physiological heredity. The activities and the instruments of activity, the control of which comes to us by imitation, are not at first comprehended either in their mechanism or in their ultimate significance. But our social, even more than our physiological inheritance needs to be corrected and improved, and one of the principal tasks of consciousness is to further this process by learning the meaning of our social practice.

Summary

In summary, we may say that the fundamental function of consciousness is that of readjustment. Thus the speed, the ease, the safety, and the possibilities of readjustment are to an extraordinary degree improved. As subordinate principles, we note that consciousness always results in movement, that it never appears except when there is need for readjustment, and that its problem is that of unraveling the plan that lies behind our unconscious instincts and uncomprehended traditions in order to reform it.

Section 19. *Habit and readjustment*

The process of readjustment results in the establishment of habits. We have already discussed[1] the physiological conditions that give rise to the associations to which we apply this name. Habit is due to specialized growth. A stimulating or unsatisfactory condition leads to diffuse reactions. Those that are unsatisfactory are inhibited and eliminated. If any be satisfactory, the synapsis, or association of nerve fibers through which it was brought about, receives a further supply of nutrition. Thus it becomes a preferred association, while others are permitted to atrophy. It is interesting to note that both the experimental reactions and the strengthening of

[1] Compare § 5.

the preferred associations are the product of the inner powers of the organism. Here, as everywhere, the general principle that change, variation, growth, is from within, the environment simply acting as a stimulating or selective agency, is illustrated.

Habit as involving loss of flexibility

As we have seen, the formation and strengthening of a habit illustrates the inertia of growth.[1] It involves specialization and the loss of a certain amount of flexibility. A result of readjustment, it would seem to interfere with all readjustment not along dependent lines of development. Every time an experiment is converted into a habit a certain number of experiments have been choked out, and are less likely to appear again. The possibilities that have been tried and found wanting are, when the satisfactory solution has been found, no longer as they were at first, liquidated resources, but tied-up or, perhaps, used-up capital. Constant inhibition has led to the abandonment of some reactions; others have been appropriated by certain stimuli. The tendency to diffusion has been checked. The movements of the body have become orderly and significant, but its power to modify readily its methods of reaction has suffered diminution.

On the other hand, it must not be supposed that this power of readjusting is completely lost. One becomes less and less likely to resort to any other than the habitual responses to a certain emergency; that is, the amount of dissatisfaction necessary in order that this preferred association may be broken up and another substituted has been increased. Here, however, another factor must be considered. It is that of consciousness. Consciousness facilitates greatly, as we have seen, the forming of habits. In the first place, as affective consciousness, its degree of sensitivity is a measure of the intensity of stimulation and the force of inhibition, and so of the activity of ex-

[1] Compare § 5.

Cognition as facilitating selection in the formation of habits

perimentation and the rapidity of selection. As cognitive consciousness it reënforces inhibitions. When the impulse to perform a previously inhibited act arises, memory adds an account of the results that followed it. This account strengthens the felt repugnance to the act.

Experiment in illustration of this

We may illustrate the manner in which consciousness assists in the formation of habits by the experiments of Professor Thorndike on animals.[1] Many species were tested, especially dogs, cats, and monkeys. One method employed was to place food in a box the door to which was secured by a fastening that could be released by pulling a string, pushing up a latch, or, perhaps, simpler movements. The animal, left without nourishment until it became quite hungry, was persistent in its endeavors to get at the food. After much effort, largely of a random character, a chance movement usually occurred by which the door was opened and the food obtained. On a second experiment, the same animal showed, as a rule, little or no gain in the ability to single out the successful movement. A long series of trials, however, reduced the time consumed in random efforts, until finally they were all eliminated, and the animal immediately performed the act by which the door was opened. Thus it had learned the trick of getting into the box.

It is evident that the growth of a more intelligent consciousness would facilitate this process. Keener feelings would intensify the disappointment of failure, thus inhibiting and eliminating more rapidly the unsuccessful movements. On the other hand, unless it were supplemented by attention, that singles out the different acts in order that failures may be distinguished from successes and the proper feelings attached to each, intensity of affective excitement would merely increase the rage for experimental effort without directing it. This sharpening of attention is, doubtless, the forerunner and the

[1] Compare *Animal Intelligence.*

companion of cognition. We may speak of it as sensation, the mere power to distinguish. Better memory converts it into perception. The meaning of different parts of the box, and of the efforts made to get into it by way of them, becomes attached to the impulses to perform these acts. The animal recognizes, as well as feels, the futility of some impulses and the promise of others. Put briefly, it remembers — in the most rudimentary way — how it got in, and also how it failed to get in. Thus cognition reënforces affective consciousness in hastening the act of learning.

Consciousness, therefore, aids in the formation of habits. It assists learning by trial and error. This it does by furthering the process of selection. Cognitive consciousness is here merely the servant of affective consciousness, the function of which is, as we have seen, that of selection. But cognition has another and radically different function. It furnishes the material for ideational readjustment. Indeed, we may say that from the very beginning this function is apparent. In reënforcing the inhibition of feeling, cognition works by anticipating the results of impulses, by giving them a meaning. This meaning is a symbolic or ideational element. The rejection through its assistance of the impulse to which it is attached is therefore ideational readjustment. This function is in the case where cognition takes the primitive form of perce tion concealed by the fact that each perception is dependent on the actual presence of a stimulating sense object. Thus the impulses associated with the perceptions come up in very much the same order that they would if the perceptive recognition of them were absent. Perception does not primarily increase the number of impulses. It does not, therefore, add at once to the resources of action, but simply facilitates the rejection or the acceptance of the impulses that would have been suggested by mere sensation. However, the character of these

Cognition as a process of readjusting in idea

Cognition as a saving of resources for future action, and hence

impulses is changed by the reading of meaning into them. Thus the way is opened for an addition to the action system. This advance appears when a new situation is faced having some of the elements of situations that have already been experienced. Here perception does yield suggestions to action that would not come up without its assistance. If, for example, after an animal has learned how to effect its entrance to a box, the character of the fastening is changed, perception might recognize this change, and so inhibit without trial the habitual method of endeavoring to open the door. If much experience in opening doors with various sorts of fastenings had been gained, a new device partly resembling others would be less apt to create difficulty. A method of attack promising success might be initiated without a lot of preliminary more or less random experimentation. Thus perception would represent experience, an actual expansion of the action system.

(1) serving an indirect and remote aim, and

It is evident that in its function of accumulating and recalling experience, perception busies itself with a task the value of which is, to say the least, somewhat indirect and remote. The immediate aim of the process of learning is to get rid of the wrong associations and to establish the right one. But cognition, even in aiding in the process of selection by which a habit is formed, is at the same time saving an account of the impulses that are thus eliminated. By remembering it is able to reject. Elimination is primarily, as it were, forgetfulness, but here we have elimination by recall. Consciousness helps by remembering not only the successful reaction, which alone is preserved by habit, but also the unsuccessful ones. In short, it saves an account of the conditions and results of experimentation, the sole use of which is to facilitate future experimentation, rather than to strengthen existing tendencies. It is of value to habit only in so far as a habit is not yet formed or needs to be remodeled. Its recall of failures and alterna-

tives, of conditions and reasons, merely unsettles a habit that is already established.

(2) counteracting the losses involved in habit forming

Thus, while, on the one hand, the formation of habits is using up the resources, the flexibility of the organism, on the other, the storing up of experience is increasing these resources. Consciousness is, therefore, constantly aiding in the formation of habits and also accumulating material for their reconstruction. It is a trite proposition that, while habits formed unintelligently may master us, those formed with consciousness are ordinarily our servants. This does not refer, of course, to the issue of strength of character as against mere knowledge of consequences in the matter of the control of moral habits, but rather to that of the power to apply one's habits accurately and freely to the various emergencies of life. The growth of cognition and of conscious memory means the growth of a power to take account in a more and more delicate way of those preliminary experiments that it is the business of habituation to banish and forget.

Habit as controlling memory and cognition

While we are fixing our attention on the fact that experience is engaged in the task of saving a description of the activities that are eliminated in the formation of habits, we should not utterly neglect the antithetical phase of the matter. The experiences that are saved to be recalled tend themselves to be selected or habitual ones. "Repetition is the mother of studies," and this is true whether study concerns habits of action or ways of thinking. The more sensitive the memory, the less likely it is that events which are not repeated will be lost, and the greater the amount of experience that will be saved for the reconstruction of habits. However, even the most sensitive memory finds, as we shall see, great need for selection, for preferential remembering and generous forgetfulness. Some experiences are worth more in the emergencies of life than others. Some contain essential principles that can be

used constantly; others find application only occasionally, or, perhaps, not at all. Others are easily and accurately put into practice. The separation of the useful and the reliable from the unimportant and the fallacious is the work of a process of selection quite analogous to that by which habits are formed.

Thus, while experience finds its function in the formation and reconstruction of habits, and is a product of the power to save that which is eliminated in ordinary learning by trial and error, it is, on the other hand, itself an example of habit. We have habits of thought as well as of action. Both are results of selection, of elimination, of forgetfulness. But while the primary function of the habit of action is to maintain an adjustment, that of the habit of thought is to effect a readjustment.

Habits of action as contributory to readjustment

We have spoken of habits of action as interfering with readjustment except along dependent lines of development. It should be noted that some such habits are, like some habits of thought, more fundamental, more reliable than others. Such habits will have, in consequence, many dependent lines of development, and will be correspondingly useful in readjustment. Thus, while the primary function of habit of action is to maintain an adjustment, if it be a typical or fundamental habit, it will need in order to meet new situations, not elimination, but rather reconstruction or recombination. A long and severe process of selection is wont to leave an individual with a set of habits that possesses to a marked degree this secondary function of coöperating in readjustment. Here selection works in the individual, as it has through countless ages in the race, to equip it with just that action system which will prove not only most adapted to conditions that remain permanent, but also most adjustable to those that change. Moreover, the results of racial processes of selection get expressed both in the hereditary equipment of the individual and in the habits formed

by imitation, for imitation hands on a social heredity that is made up of patterns which have survived ages of selection.

To comprehend the use of habits of action in situations other than those for which they were originally formed, we must bear in mind the complicated nature of the stimuli to which most reactions are made. It is natural to regard a habit as a mechanical response to a simple stimulus. Such is rarely the case. Indeed, it is not true to any extent even of the reflexes, which, according to Professor Jennings,[1] depend not only on the external stimulus, but also on the "physiological state of the organism." A habit is, in the ordinary sense of the term, a more or less complicated response to a set of stimuli. Now the extent to which such a response can be reconstructed depends upon the extent to which the factors in both the stimuli and the response are susceptible of analysis and of recombination in new associations.

The existence of a habit that is adjusted in part to a new situation gives to its possessor a starting point for experimentation. To a dog, endeavoring in the experiments of Thorndike to get into a box, the situation is not overwhelmingly new. The box is an obstruction of an inanimate sort, and is to be dealt with as such, and not as a living thing. In appearance it is sufficiently frail to suggest the possibility of breaking it open by pawing, gnawing, or what Mr. Hobhouse[2] calls "scrabbling." These suggestions offer a basis from which further experimentation may proceed with a fair prospect of success. Of course, the dog cannot be supposed to be conscious of the fact that his first endeavors are prompted by what is familiar in the situation. He acts without reflection, but, nevertheless, with the handicap of a sufficient sense of recognition of the emergency to replace what would otherwise

[1] Compare Jennings, *Behavior of the Lower Organisms*, p. 280; also § 9.

[2] *Mind in Evolution.*

be mere blind experiments by a fairly promising line of effort.

Value of experience in the reconstruction of habits

The process of analysis and reorganization involved in the advance from the preliminary tentative endeavors to a properly adjusted movement may go on by the method of trial and error. It is, however, greatly facilitated by experience in reference to the habits that are employed. Such experience enables a preliminary stage of reflection and ideational readjustment before the first experiments are permitted. It also constantly illuminates the subsequent experiments, thus hastening the progress toward a conclusion. A man, before launching into a series of efforts to open a door with a strange fastening, would carefully inspect it, and reflect upon what method of attack would be likely to effect the desired entrance. Moreover, his experience would cause each unsuccessful experiment to teach him more than it would the brute. However, even in his reflection he tends to use habitual thought rather than isolated or untested ideas as to the way things may be done.

The complicated character of the situations which offer the problem of readjustment to the higher animals and to man makes it likely that at least some factors therein contained will be familiar. This familiarity offers the opportunity for previously formed habits of action as well as for habits of thought to aid in readjustment. Thus habits, if they be fundamental, and especially if they be both fundamental and accompanied by experience as to their use, are, so far from being a bar to learning, the indispensable agency of its continuous progress.

Summary

The general relation between habit and readjustment may, then, be stated as follows: Readjustment in the individual means the formation of habits. This process establishes preferential associations and eliminates the tendency toward diffusion, thus destroying, as it were, the power of experimenta-

tion on the basis of which the early capacity to learn is based. Thus habits of action are a result of readjustment, and an obstacle to future readjustment except along dependent lines of development. However, the loss of flexibility that learning by trial and error involves is in part, at least, made good by the power of consciousness to retain experience in regard to the rejected experiments. This experience becomes immediately available in the process of experimentation, since it accompanies the recurrence of impulses to perform acts already found unsuccessful, thus reënforcing by memory of their consequence the felt tendency to inhibit them. Here cognitive consciousness aids affective consciousness in its task of eliminating failures and strengthening successes. When, however, new situations appear, the experience gained by cognition offers suggestions toward readjustment that are drawn from the unsuccessful as well as the successful experiments. It thus enables suggestions to action to appear which would otherwise have been lost, surrounding them with a description of their conditions and results that makes an ideational determination of their availability possible. Thus, while habit strengthens adjustment, cognitive consciousness everywhere exists to further readjustment.

But while the function of cognition is to provide material for the reconstruction of habits, the experience that it hands on is itself subject to the same laws of selection as are habits of action. We forget experience, just as we inhibit impulses. There are habits of thought as well as of action. Indeed, the relative availability of experience for purposes of readjustment depends upon the excellence of the process of selection by which it has been garnered. In this process the individual is aided by imitation, through which his experience is led to be the same as that of the race. Thus he inherits in his experience the results of ages of social evolution, as in his physical action sys-

tem he inherits the product of æons of physiological development.

Habits of action are an aid to readjustment along dependent lines of development. New situations are seldom wholly new, and in so far as they are familiar, the existing habits of the individual may be and often are applied to them. In such application they need reconstruction. This process may go on by mere blind trial and error, but it is enormously aided by experience in regard both to the use of the habits and to the process of experimentation by which they were formed or have been in part modified. This experience also makes it more likely that a new situation will be recognized as offering the opportunity for the application of an old habit. In general, therefore, experience everywhere plays about the habits of the individual, saving and, indeed, enhancing his flexibility by converting his very automatisms into capital for progress.

CHAPTER VI

RECAPITULATION

SECTION 20. *Various theories of recapitulation*

IN discussing the hereditary basis of individual development[1] mention was made of the fact of recapitulation. Ontogenetic is parallel to phylogenetic development. The action system of the individual tends to become available in the same order in which it evolves in the history of the race. This theory became current in the early part of the eighteenth century. As a biological principle, it is associated with the notion of evolution that then appeared, but it was merely a vague general conception until it reached expression as a fact of embryology, first in a suggestion of Agassiz, and later in a more positive way by Von Baer and Müller.

Rise of the idea of recapitulation

As the notion of recapitulation gradually became formulated, it attached itself to two opposing theories of human nature and development. In a sense these two conceptions were the descendants, the one of the theory of innate ideas and the other of the view that all ideas are derived from experience. Thus, according to the first conception, which we may call that of psycho-physiological recapitulation, both the mental and the physical powers of the individual expand, irrespective of training, in the same order in which they develop in the race. They and the manner of their growth are innate. According to the second conception, that of cultural recapitula-

Two sorts of recapitulation

[1] § 16.

tion, the natural order of presenting the experience, by which alone a child's development can be obtained, is that of the acquisition of this experience by the race.

Rise of the idea of psycho-physiological recapitulation

The idea of psycho-physiological recapitulation is foreshadowed in the theories of Rousseau, in which, curiously enough, we find a very pronounced empiricism, founded on agreement with Locke, together with the conception of development according to nature, which meant that a child left alone to get his own education in a natural way would grow to the full maturity of his powers by mere inner expansion. It is true that Rousseau counted on the influence of a very simple natural environment, but after all it was the realization of what God or Nature had planted in the child that to him constituted the true goal of education. Froebel adopted this notion of development from within, giving it a philosophical interpretation, and declaring it to be an epitome of the evolution of the race, thus stating quite clearly the notion of recapitulation. Unlike Rousseau, he did not regard the formative culture of society as an evil, but he agrees with that revolutionist in placing all emphasis upon inner development.

Reactionary emphasis on culture and cultural recapitulation

Among other German thinkers of the period, however, there was a very decided reaction against Rousseau's rejection of social culture, the heritage of civilization. With them the specific nature of the experience which constitutes the education of the child becomes again of importance, if not, indeed, the main consideration. In Lessing's *Education of the Human Race* we find emphasized the notion that humanity has developed through stages of culture, each of which constitutes an inevitable step in its education. It gets to the higher stages only by living through the lower ones. Thus earlier forms of culture that progress has rejected are, after all, indispensable parts of God's scheme in raising us to our present civilization, — a civilization which is not, as Rousseau thought, man-

made and evil, but God-made, and one to which it is God's plan that we should strive to adapt the child. Moreover, just as the race could reach the higher altitudes only by traversing the intermediate ones, so the child must pass through savagery and barbarism on the road to enlightenment.

Recapitulation conceived as a logically necessary order of growth

Among the earlier exponents of the view, recapitulation was thought of as a logical necessity rather than as a mere empirical fact. Thus psycho-physiological recapitulation was conceived to be a consequence of the laws of mental and bodily development, which must, of course, operate in the race and in the individual alike. Growth, whether of mind or body, was regarded as a realization of the inner potentiality of the soul or of the germ, a self-active process, governed by a law of inner necessity. We have here merely a philosophical premonition of the biological view of Von Baer and Müller. From the notion of a necessary order of development is deduced a consequence that receives somewhat startling confirmation in the discoveries of embryology.

The same necessity that Froebel saw in psycho-physiological recapitulation Lessing found in cultural recapitulation, or recapitulation through education. It is thought that the process of absorbing the culture of humanity must pass through certain necessary stages. This is not because the powers of the individual expand in a certain way, but because the culture material of one age constitutes the logical and necessary preparation for that of the next in the order of progress. This view is that suggested by Herbart in the *Æsthetic Revelation of the World*, and developed by Ziller into the *Culture Epoch* theory. In this form it has played a familiar part in educational theory and experiment both in Germany and in the United States.

Up to a certain point the criticisms of the two theories of recapitulation are alike. In so far as the order of development

The racial order partly inevitable and partly accidental

of the physical or mental powers is, as it were, necessary and inevitable, both racial evolution and individual development must reveal this order, and hence correspond to each other. Similarly, wherever the culture of one epoch is an indispensable prerequisite to comprehending the culture of later periods, and ultimately of to-day, it must be given in the order of its history, as an introduction to the life with which the child will have to deal. On the other hand, it is certain that neither biological nor social evolution reveals any logical perfection of progress from antecedent to consequent conditions. Hence the way is opened for individuals to vary from racial development. We might, then, expect, what as a matter of fact is true, that the ontogenetic series should not perfectly reproduce the phylogenetic one in either psycho-physiological or cultural recapitulation. It is in the extent of the exceptions to recapitulation and in the manner in which they are made that the main difference between the two types is to be found. Concerning these exceptions to psycho-physiological recapitulation, Marshall, who makes much of the general fact, says: —

Exceptions to psycho-physiological recapitulation

"The history of development in different animals or groups of animals offers to us, as we have seen, a series of ingenious, determined, varied, but more or less unsuccessful efforts to escape from the necessity of recapitulating, and to substitute for the ancestral process a more direct method."[1]

Hence, although the fact of recapitulation remains in general true, there is often a more direct method of reaching the goal of development. Moreover, this more direct method has in many cases been brought into existence. The most striking modification of recapitulation is the development of infancy. Here, of course, no adult stage of ancestral life is represented. Moreover, the existence of infancy offers at once opportunity and need for further variation in the recapitulatory series.

[1] *Biological Lectures and Addresses*, "The Recapitulation Theory," p. 255.

The stage of reproduction is of necessity postponed until maturity, thus coming after epochs that it antedated countless ages in the phylogenetic series. Associated with the beginning of infancy is the development of food yolk in connection with the ovum. This store of nourishment removes the need of self-help on the part of the young, and so makes possible immaturity. An earlier but less efficient maturity is thus given up in exchange for a later more efficient one. However, any tendency on the part of the protected and supported young to rush rapidly through the stages of development receives the support of natural selection, for it relieves the parent by so much of the burden of sustaining other life, and thus increases the total efficiency of the stock. Hence variations toward a more direct process of development than that of recapitulation will be encouraged. Such variations do appear.

"We are in some danger of assuming tacitly that the mode of development of allied animals will necessarily agree in all important respects, or even in details, and that if the development of one member of a group be known, that of the others may be assumed to be similar. The more recent progress of embryology is showing us that such inferences are not safe, and that in allied genera and species, or even in different individuals of the same species, variations of development may occur affecting important organs and at almost any stage in their formation."[1]

Method of modifying it

It is evident that recapitulation is an hereditary trait, dependent very largely upon the dynamic properties of the cell. As such, it is liable to variation along with all other hereditary traits. Such variations will, of course, be favored or repressed by natural selection according as they benefit or injure the stock. Under these conditions we might expect that the life

[1] *Ibid.*

history of any individual to-day would represent inversions and omissions of the phylogenetic series. These latter are very appropriately called "short cuts" by Professor Baldwin.[1] On the other hand, the ultimate result is not required to be perfect, so long as it works in the conditions of life presented to-day. Recapitulation may, therefore, be regarded as partly the survival of unnecessary but harmless hereditary tendencies, and partly as the only method by which the mature form can be developed. The historical order contains many accidental stages, some of which may have been eliminated from individual development, while others remain as rudimentary. However, those stages that are indispensable to attaining the goal are bound to remain, and to appear in the order of their evolution. Recapitulation is an hereditary tendency more or less well calculated to attain a certain result. This tendency remains so long as no better way of attaining the same end chances to appear and to replace it in the struggle for existence.

Need and method of modifying cultural recapitulation

If the tendency toward psycho-physiological recapitulation does not represent the only method of reaching the goal of maturity, but is subject to variation and selection, much more can this be said of cultural recapitulation. For cultural recapitulation concerns social heredity, and this, as we have seen, is largely made up of characters that are left to be thus handed on in order that they may the more easily be dropped out when the conditions of life to which they are fitted change. To modify a tendency toward psycho-physiological recapitulation, nature must have variations, and must eliminate those who do not vary rightly. To modify a tendency toward cultural recapitulation mankind has only to change the method of education in such ways as are possible. As a matter of fact the greater part of our cultural history could be left out of the training of the individual without seriously impairing his effi-

[1] *Mental Development, Methods and Processes*, Ch. I, § 4.

ciency. Consequently much has been left out. Social heredity is a badly mutilated fragment of recapitulation. Nevertheless, much unnecessary recapitulation doubtless remains, because no substitutes have been invented, as the Chinese in Lamb's celebrated "Essay on Roast Pig" continued to burn down their houses in order to secure this prized viand, waiting for chance to reveal a better way.

Summary

We may say then, in conclusion, that in so far as the phylogenetic series in biological or cultural evolution represents a necessary order of development the ontogenetic series will reproduce it. Since, however, this necessary sequence is by no means an universal characteristic of racial history, the way is open for exceptions to recapitulation. The tendency toward psycho-physiological recapitulation can be modified only by the method of variation and selection that constitutes the mode of progress for physiological heredity in general. Nevertheless, it has been extensively modified, especially in connection with the rise of infancy, which has upset considerably the tendency for the racial order of development to appear in the individual. On the other hand, cultural recapitulation is a matter of social heredity, and in so far as it is not the inevitable order of apperceiving experience can be readily modified as chance or reason may suggest.

Section 21. *Psycho-physiological recapitulation and education*

Two forms of the application of psycho-physiological recapitulation to education

The notion of psycho-physiological recapitulation has been applied to education in two general forms. It has been held to furnish the clew to the order in which are developed either the faculties of the mind, on the one hand, or the instincts of the individual, on the other. The general notion as to the order of development of the faculties was not, however, origi-

nally an outcome of the theory that we are considering. It antedated that theory, and, in consequence, has no necessary connection therewith. Nevertheless, when the thought of recapitulation became prominent, the older view based on the so-called "faculty" theory of the mind was recognized as in harmony with it. According to this view, all mental development is thought to begin in sense observation, to be continued in imagination and memory, and to conclude in reason and judgment. The theory became emphasized shortly after the Renaissance, when science began to be differentiated from metaphysics, and philosophy came to be approached from the point of view of psychology. As a result of the one movement, it was recognized that the purely speculative methods of the schoolmen should give place to methods founded on observation. Observation becomes, therefore, the first step in scientific progress. The second, or psychological, movement emphasized the dependence of the content of the mind upon the material furnished by the senses. There resulted in education a realistic tendency, the essential features of which were that it was thought that the subject matter of education should consist largely of things and less of words, and that the initial step in method should be an appeal to the senses.

Rise of the notion of development according to the faculties

No one can doubt the essential truth of these educational principles. It will readily be seen that they can be made part of a theory of recapitulation based on the analysis of mental activity into faculties. The development of the theory rendered inevitable this application, and we find it made by many writers of the early nineteenth century. A typical statement is that found in Rosenkranz's *Philosophy of Education.* According to this writer the presentation of any subject may be according to the logical order of its subject matter, or to the psychological order of the development of the mental powers. From the latter point of view, Rosenkranz divides

Combination of this view with that of recapitulation

the life of the child into an intuitive, an imaginative, and a logical epoch. During the first of these periods the appeal should be to the senses. Later, imagination and memory are called into play, and the entire movement should culminate in stirring up the logical processes.

Application of the view to education

In a general way, the view thus indicated is true enough, and practical as applied to teaching. It needs, however, to be subjected to an amendment. It involves the assumption that the faculties are distinct from each other, and that they develop independently. The child, it is assumed, first observes without remembering or imagining to any great extent. He thus develops a power of observation that may be used in any field without reference to subject matter. Later other powers appear, and as soon as one emerges a new form of instruction becomes possible. It is absurd to reason with a child who has not yet attained to the logical period, or to expect him to remember and imagine while he is still in the intuitive age. Moreover, when once children have reached the rational age, it is supposed that they will be logical on any subject. All these assumptions are faulty. As a matter of fact, a child usually is in the intuitive epoch in respect to some subjects and in the logical one as regards others. The analysis of the mental processes does not, we now realize, mean the discovery of independent faculties, but rather the revelation of the forms through which any given content must pass as the mind reflects upon it and utilizes it in new conditions. As a guide to the method by which new material must be presented, the idea of a psychological order of development is of great value. But as a clew to the way in which a subject must be taught to a child of certain age, no matter what his previous experience with that material may have been, it is, to say the least, to be used with caution. Common sense, indeed, tells us that we cannot expect from young children certain compli-

Criticism of this application

cated pieces of reasoning, based on comprehensive experience and a large number of well-mastered concepts. Nevertheless, it is astonishing what seemingly impossible feats such children will perform, provided the ground is properly prepared. Mathematical analysis impossible to untrained though intelligent adults can be carried on by children in the primary grades.

The faculty theory is so intimately connected with that of formal discipline that applications of the former conception are likely to involve the latter one as well. Since the notion of formal discipline will be discussed in a separate chapter,[1] we may here omit to consider it. As concerns the main issue, that of recapitulation, we may say that in so far as the epochs distinguished represent a necessary order in treating a subject matter, they will be illustrated in the learning of that subject matter either by the race or by the child. However, so far as the apperceiving mind is concerned, an intuitive epoch for one subject may be contemporaneous with a logical epoch for another.

Recapitulation in the development of the instincts

A more original and characteristic application of the idea of psycho-physiological recapitulation is found when we apply it to the order of development of the instincts. All education must address itself to these, because all learning springs from activity in the endeavor to satisfy instincts in situations with which our instinctive or habitual reactions fail to cope. Until certain instincts appear, the child would have no motive for acquiring the experience that naturally clusters about them. The teacher could, therefore, postpone instruction along these lines until the favorable period. Hence, if recapitulation holds of the instincts, the teacher will get valuable information from a study of the racial history. Thus he will be able to discover the kind of material that will be likely successively to interest

The theory as a guide to the order in which subjects should be presented

[1] Compare Ch. X.

the child, and, since the order of apperception is the order of interest, he will be able to present the content of culture in the form most favorable to its ready assimilation. Moreover, if complete cultural recapitulation is regarded as in great part unnecessary, at any rate the instincts that should be developed may, by consulting the order of the evolution of the culture materials relating to them, be appealed to in the proper sequence and with appropriate subject matter.

The idea that instincts are transitory, and that there is a favorable time for appealing to each, is well brought out by Professor James.

James on seizing the "happy moment" in education

"In all pedagogy the great thing is to strike the iron while hot, and to seize the wave of each pupil's interest before the ebb has come, so that knowledge may be got and a habit of skill acquired — a headway of interest, in short, secured on which afterward the individual may float. There is a happy moment for fixing skill in drawing, for making boys collectors in natural history, and presently dissectors and botanists; then for initiating them into the harmonies of mechanics and the wonders of physical and chemical law. Later, introspective psychology and the metaphysical and religious mysteries take their turn; and last of all, the drama of human affairs and worldly wisdom in the widest sense of the term." [1]

It is evident that the view here expressed does not involve the notion that the instincts that are transitory in the individual recur in the order of their appearance in race history. The illustrations are, indeed, by no means calculated to justify such a view, except in a very general way. We may then conclude that the idea of recapitulation finds its value in merely suggesting an appropriate order of appealing to the instincts and of presenting the culture materials, but that the racial order must be verified in the development of the

[1] *Principles of Psychology*, Vol. I, p. 401.

individual before it can be regarded as an accredited guide for educational practice.

The theory as a guide to the interests that should be cultivated

The educational application of the idea of recapitulation according to the instincts becomes a more thoroughgoing affair with those who see in the development of these instincts, not merely an agency of education in its endeavor to bring about efficiency, but a goal at which education should aim without regard to the specific utility of the result. Thinkers of this sort believe that all instincts should be cultivated because they represent the order of nature in child growth, and because through their development the child realizes his nature. On this view many instincts, such as those associated with fighting and fearing, which education ordinarily neglects or represses, should be fed and given their fling. The conception of recapitulation helps us to become aware of this neglect in child culture, and the search of racial culture combines with a more scientific child psychology to reveal many interests that a supposedly imperfect educational system has suffered to atrophy in the child.

This positive culture of all the stages and instincts in racial history that incipiently appear in the development of the child is advocated by President Hall, not merely as a means of self-realization, but also as a measure of the wisest utility. He says: —

Hall on allowing the instincts "their fling"

"Rousseau would leave prepubescent years to nature and to these primal hereditary impulsions and allow the hereditary traits of savagery their fling till twelve. Biological psychology finds many and cogent reasons to confirm this view, if only the proper environment could be provided. The child revels in savagery, and if its tribal, predatory, hunting, fishing, fighting, roving, idle, playing proclivities could be indulged in the country, and under conditions that now, alas! seem hopelessly ideal, they could conceivably be so organized and directed as to be far more truly humanistic and liberal than all that the

best modern school can provide. Rudimentary organs of the soul now suppressed, perverted, or delayed, to crop out in menacing forms later, would be developed in their season so that we should be immune from them in maturer years, on the principle of the Aristotelian *Catharsis* for which I have tried to suggest a far broader application than the Stagirite could see in his day.

"These nativistic and more or less feral instincts can and should be fed and formed. The deep and strong cravings of the individual to revive the ancestral experiences and occupations of the race can and must be met, at least in a second-hand and vicarious way, by tales of the heroic virtues the child can appreciate, and these proxy experiences should make up by variety and extent what they lack in intensity. The teacher art should so vivify all that the resources of literature, tradition, history can supply which represents the crude and rank virtues of the world's childhood, that with his almost visual imagination reënforced by psychonomic recapitulatory impulses the child can enter upon his full heritage, live out each stage of his life to the fullest, and realize in himself all its manifold tendencies. Echoes out of the vaster richer life of the remote past they must remain, but just these are the murmurings of the only nurse that can save from the omnipresent dangers of precocity. Thus we not only rescue from the danger of loss, but utilize for further psychic growth, the results of the higher heredity, which are the most precious and potential things on earth." [1]

Three reasons for complete recapitulation

This passage gives us an original and brilliant defense of the utility of encouraging all the instincts that the child's growth tends to recapitulate. It will be noticed that three reasons are offered for this policy. In the first place, it is declared that if these instincts are not cultivated at the time when they naturally are strongest, their development is retarded, and they are liable to appear later in perverted forms. Secondly, the point is made that a child who is not allowed to

[1] *Adolescence*, Preface, pp. x and xi.

revel in these instinctive occupations runs the risk of arrested development from too early precocity. Finally, by means of the rich fund of material thus developed, President Hall thinks the life of the man is rendered many-sided, significant, and resourceful. The fund of material for variation, both in the individual and in the race, is enormously expanded. He would have this education of the primitive instincts given in the period from five to eight or nine. Thereafter, in his opinion, a more coercive school training should be carried on, which should follow to a great extent the methods of "old-fashioned" schoolmasters.

(1) Criticism of the *catharsis* theory

The conception thus advanced is exceedingly suggestive. Presented with the enthusiasm and with the richness of illustration that characterizes the author, it can prove convincing. It is, however, not to be entertained without important reservations. The view that all instincts that are not encouraged at the time when they are at floodtide are apt to manifest themselves later in perverted forms is one that masses together much truth and many false implications. There is probably no instinct to which it applies so directly as it does to the sexual one, — an instinct, by the way, that plays the Hamlet rôle in President Hall's discussions. Now while there can be little doubt as to the fact that the control of this instinct demanded by civilization leads to many perversions, it is certainly true that the consequences of feeding the instinct, either by actual indulgence or vicariously by stimulating the fancy, are far more dangerous both to the individual and to society than the resolute effort to bring it under control by the methods of antagonizing heredity that have been already discussed.[1] Especially do we find effective the substitution of ideal or romantic love. The tendency of advancing civilization, while it may favor a certain frankness in such matters,

[1] Compare § 11.

and may also avoid puritanical or monastic extremes, is apparently constantly in the direction of more careful and effective control. When we consider such savage tendencies as the predatory, the hunting, the fighting, the roving, the idle proclivity, one wonders just what serious perversions are apt to result from the failure properly to indulge them in childhood. The idea of a catharsis of these instincts, while intensely interesting as a general notion, does not seem to be so vitally important when we consider the dangers against which this sort of vaccination is aimed. Indeed, perversion, or, at any rate, degeneration, is far more likely to come from an over-indulgence in these tendencies, which so intensifies the interest in the life they involve that the more humane, civilized, and ethical tendencies have a difficult battle to displace them. Moreover, it would seem that the infancy, or the immaturity, of these instincts would find its value in that it enables us to suppress or modify such relics of a mode of life no longer necessary or desirable.

Perversion by habituation

If a given instinct is to play an important part in the adult life of the individual, neglect of it during the period of childhood when it becomes prominent will leave the individual so untrained that his later activities in reference to it may well seem like perversions. To make a hunter, a tennis player, or one with a graceful presence and readiness of resource in society, the hunting, tennis playing, and social tendencies of the youth must be cultivated. One who late in life takes up for the first time sports involving physical skill, or attempts to play a rôle in fashionable society after a youth and early manhood spent in entirely different scenes, finds readjustment exceedingly difficult, if not impossible. But awkwardness is not in itself perversion, although it makes one dissatisfied, and may lead to morbidness. The adult who suddenly develops an interest in activities normal to childhood, but neglected then, is bound

Conditions under which instincts should be encouraged

to appear ridiculous to the onlooker, because his interest is childish and naïve, rather than experienced and sophisticated. However, for a man to play a child's part argues a lack of balance or of training, but not, as a rule, a perversion.

The important consideration is, after all, the positive one. Instincts should be cultivated if they contribute to the resources of life. If they do not do this, they should not be trained in childhood merely for fear that otherwise peculiarities of nature or of circumstances may lead them to appear in ridiculous forms in adults. There is very little likelihood that they will crop out in adult life unless they form the basis of a very important phase of the life of the normal man or woman. When such is the case, the endeavor on the part of one who has hitherto neglected the aspect of life that they condition again to resume his heritage will doubtless seem to the onlooker absurd or pitiable.

(2) Criticism of the theory of "arrested development"

The notion that to neglect the cultivation of the instincts of a child will lead to too early maturity and, in consequence, to arrested development, or improper maturation, is also one that stirs enthusiasm as a striking generalization more easily than it compels assent when it is subjected to the test of facts.

Causes of this state

It is both true and trite that when children are pushed too rapidly along the lines of old-fashioned school discipline, they run the risk of a loss of health which may involve arrested development. It is also true that when children are driven to do work in which they have as yet no instinctive interest, or for undertaking which they have no adequate basis of experience, they are likely to acquire a distaste for it which may seriously impair their chance of later success in this field. Moreover, many facts conspire to show that when children are compelled to get their living at an early age, and so to acquire what corresponds to an adult adjustment at a time when they do not possess an adult's experience or mental and physi-

cal vigor, there is danger that they may never get beyond the habits thus prematurely ingrained. The child bootblack becomes the man bootblack. Here habit and specialization may constitute in a peculiar degree a bar to progress, because it prevents the acquisition of a fund of experience and of aptitudes by which readjustment is rendered possible or easy.

Conflict of the primary and secondary functions of infancy

It is interesting to note that here what may be called the primary function of infancy comes a little in conflict with a secondary one. The primary function of infancy is not so much to ward off maturity as it is to offer the child a chance to develop the habits best suited to its environment without the interference of hereditary characteristics ill-adapted to the present conditions. But if the child acquires a mature adjustment too early, it will encounter, when readjustment becomes desirable, the same difficulties that would have existed had it inherited acquired characters. Early maturity, whether in individuals or races, usually goes with a low average intelligence and set modes of life. This, if not quite so true of an early maturity that results from training as it is of one that is hereditary, holds, nevertheless, of both. The bread-winning occupations of which a child is capable are of necessity far more limited and in a sense more specialized than those that an adult can carry on. Early specialization does not promote later progress except along the lines of the specialty. Such early maturity is a danger, because it prevents the child from acquiring his proper equipment of experience. It is bad because of what it crowds out. It is bad because it means an adjustment that for the time contents, and this contentment by continuing is apt to deprive the individual of any incentive for betterment, until the age of readjustment is past. In man the infancy, that exists primarily that each generation may have a freedom to obtain the adjustment peculiar to its conditions of life, comes to have the secondary function of afford-

ing an opportunity for acquiring, not so much specific mature adjustments, as rather a resourceful action system of habits and experience that shall constitute the capital for all later readjustment.

We may then agree with President Hall that child education should avoid premature specialization; that is, specialization that is likely to be a bar to readjustment or to the accumulation of resources for readjustment. We can further subscribe to the view that it is in deep plowing of the soil of the instincts that we get the best preparation for broad interests and resourceful intelligence in the emergencies of life. But this does not require that education should encourage tendencies that the race has outlived, or interests that play no part in adult life. Many children love to tease and bully. This is a relic of the primitive instinct of leadership, — an instinct still very useful, but not to be cultivated by encouraging the cruder acts to which it prompts. The hunting instinct will very likely before many centuries cease to serve any useful educational purpose. Fighting and the predatory instinct are not to be indulged simply because such a course may prevent premature maturation.

Complete recapitulation not necessary to prevent arrested development

(3) Criticism of the theory of provision for variation

When we get away from the negations of the idea that we should cultivate the instincts for the sake of catharsis or of avoiding prematuration, and enter the region of affirmations, we reach President Hall's third point. It is, he thinks, by cultivating the instincts that material for variation, both in the child and in the race, is to be developed. The idea that the race is to be improved in this manner begs the question in favor of the inheritance of acquired characters, but there can be no doubt that an education that aims to equip the individual with power of readjustment must select those interests that are organic in the social life of to-day, and cultivate them in a free and comprehensive way. This does not mean,

however, that much that children may or must like is not to be kept in innocuous slumber. Education everywhere validates its work by reference rather to the needs of life to-day than to the inherited tendencies of the child. The cultivation of the instincts, even when it is providing for readjustment, should be a selective rather than a promiscuous process. Social heredity exists to supplement, direct, modify, or even to suppress physiological heredity, and not merely to promote the course of nature.

Summary

In summary, we may note that the conception of psycho-physiological recapitulation has been applied to education in two forms: first, as indicating the order of development of the faculties, which it is supposed to be the business of education to cultivate, and second, as pointing out the time of appearance of the instincts, to which education must appeal, if it is not to lack motive and so fail of effect. The idea that the faculties develop in a certain order appeared in education before the idea of recapitulation, but when the latter notion was advanced, it was used to support the former. According to the resulting view the age of the child will determine the method by which any subject should be presented to him. This notion is faulty because a faculty means the power of dealing with specific material in a certain way, — a power which depends quite as much upon the child's previous experience and training in the given subject matter as it does upon his age. Thus children may be in the intuitive epoch in regard to some subjects, and in the logical one in respect to others. Little children can reason within limits, and older ones need to have their powers of observation appealed to. In fact, observation, memory, and reason are intimately interrelated, and it would be true to say that reason helps memory and power to observe quite as much as it is helped by them. The treatment of any topic will, in general, involve the exercise of the

faculties in the order of recapitulation, but further than this the conception in question does not apply.

The study of racial history proves more useful to the teacher in revealing the instincts to which he must appeal and the order of their appearance. It shows him many useful instincts which he might otherwise have neglected, puts him on the alert for their appearance at certain times, and suggests culture material that can be utilized in stimulating them. It helps to reveal the time at which certain valuable subjects can best be presented. When, however, it is urged that all the racial instincts that tend to reappear in the development of the child should be cultivated, our fundamental conception that in man physiological heredity is largely of such a character as not to determine the specific lines of education, but rather to offer the materials from which education can select the definite adjustments needed at the time, should be applied. Accordingly, we may conclude that many instincts should be neglected or suppressed. However, the life of man to-day is so full of the need for readjustment that the education of the child becomes of necessity more an accumulation of resources for this purpose and less the acquisition of specific adjustments. It follows that education must exercise great care lest instinctive tendencies and culture material that may prove useful are not suppressed or neglected because that use cannot be definitely foreseen. In general, a broad cultivation of what nature has given the child for the sake of readjustment is a good preparation to make an adaptable man. Nevertheless, the problem of selection cannot be dodged by the teacher, nor the issue of progress settled by an appeal to the blind forces that come up to us out of the past.

Section 22. *Cultural recapitulation*

Culture as recapitulation

That our education carries us through stages that have constituted epochs in the history of social progress is a much more evident fact than that of biological evolution. As soon as one reflects even superficially on the process of education, he is impressed with the fact that it consists very largely in bringing the child up to the standard adjustment of the adult. When we add to the consciousness of this fact the historical knowledge that enables one to understand that human history has been one of progress rather than of degeneration, it is inevitable that the parallel between the educational development of the child and the gradual evolution of higher adjustments and standards in the race should be quickly recognized.

Mention has already been made of the general notions of Lessing on what he called *The Education of the Human Race.* These ideas were further developed by Herder in his *Ideas for a Philosophy of History.* We find them receiving educational application by Herbart in the following words, which constitute the suggestion of the culture-epoch theory, later elaborated by Ziller: —

Herbart on the culture suitable to the child

"It would be somewhat difficult to state the starting point of progressive sympathy and to justify the statement. Closer consideration shows that this point cannot lie in the actual present. The child's sphere is too narrow, and traversed too soon, the adult's sphere among cultivated people too high and too much determined by relationships which we would not explain to the little boy if we could. But the true successions of history end in the present, and in the beginnings of our culture among the Greeks an illuminated spot for the whole of posterity is formed by the classical representations of an ideal boyhood in the Homeric poems." [1]

[1] *Æsthetic Revelation of the World* (Felkin's translation).

Ziller on culture epochs and concentration

This notion that we must go to simpler social conditions and, indeed, to those that constitute the beginnings of culture to find the sort of experience with which the education of the child's sympathies should begin is elaborated by Ziller into the culture-epoch theory. Not only does Ziller suppose that there is a series of stages in racial history that furnishes the materials which are successively most appropriate for the culture of the child's social nature, but by the use of the theory of concentration he was able to outline a scheme for the organization of the study of physical nature on a similar basis. Assuming with Herbart that moral character is the aim in education, and that this expresses itself in the social relations of life, he succeeded in concentrating all the studies of the school about the humanities, and especially history. Mathematics, natural science, grammar, and logic, according to this scheme, are taken up in order to further the comprehension of the culture of the epochs that the sequences of history present.

The order of cultural history as the order of apperception

It is important to bear in mind that with the Herbartians the fundamental justification of the arrangement of study according to the culture epochs lay in their view that this order is that of proper apperception. The ideas and customs of one age constitute in their view the natural introduction to those of the next. This is the inevitable order of the development of the material of social heredity. It is not a question of suiting the instincts as they come into activity, but rather of logical arrangement of the content of education so that it proceeds properly from the old to the new, from the simple to the complex, from the near to the remote. The order of cultural history is supposed to be the order of apperception.

Exceptions to this principle

If, then, any one of the earlier phases of culture is unnecessary as an introduction to the life of to-day, it may be omitted in the education of the child. We may suppose that there are many such exceptions. Invoking our principle that social

heredity consists in great measure of adaptations to variable and so temporary conditions, we may well believe that any resolute attempt to recapitulate racial epochs would lead not along a highway of continuous progress, but rather into a succession of blind alleys. This difficulty becomes evident when we study specifically the results of Ziller's plan.

The culture-epoch theory in applicable to the teaching of science and mathematics

First of all, this plan makes the treatment of subjects outside of history and literature difficult. To lead the child through the study of the scientific conceptions of earlier periods in human history is a laborious and to a considerable extent an unnecessary task. The history of science, as contrasted with the study of science itself, presents the curious and the abandoned elements of culture, rather than those that are valuable to-day, and while this subject has a place, it is rather at the end than at the beginning of scientific training. Again, the attempt to teach science as a means of comprehending past culture means to run the risk of leaving out much that is very important for the comprehension of modern life and the development of efficiency. Finally, the endeavor to drag in all the other studies at the heels of a study of history involves an almost unavoidable awkwardness of treatment. Phases of history that have little value from the historic or humanitarian point of view must be emphasized in order to furnish a basis for studying indispensable parts of science. It seems impossible to provide for concentration in any but a most artificial way without transcending the possibilities of the ordinary school in both the extent and the difficulty of the program thereby involved.

Difficulties due to concentration about the humanities

These objections to Ziller's plan of concentration are, it is true, partly the result of his notion of the aim of education rather than of the culture-epoch idea itself. If education aims at moral character alone, and does not expand this conception so that it becomes efficiency in all respects, industrial as well as social, it is evident that the humanities are far more impor-

tant elements of culture than science. Indeed, they are the proper core of the curriculum. But the development of the more modern aim of preparation for complete living makes it necessary that we should lay great stress on aspects of culture that do not find their sole aim in that they contribute to social tact or capacity for social control, but instead function in relation to the arts and crafts, and to those professions that involve expert knowledge of the laws of nature. Constantly increasing emphasis, especially in elementary education, on that phase of instruction that is least amenable to treatment on the basis of the principle of recapitulation has caused that idea to fall into neglect as a basis for the organization of prevailing courses of study.

De Garmo's scheme of coördination. Recapitulation in the humanistic group

To avoid the difficulty here involved, Professor De Garmo has proposed what he calls a scheme of coördination.[1] He would have three groups of closely interrelated subjects: the humanistic, where the ethical element is dominant and the idea of recapitulation applies; the scientific, where, of course, the ethical element is absent and the culture-epoch idea has little or no place; and the economic studies. The function of the last is, he conceives, to connect the ideal results of humanistic study with the instrumentalities for realizing these ideals that are revealed by a study of nature. In such a group, geography, or the study of the earth in its relation to man, is central.

Dewey's scheme of concentration about the social life of the school. Its use of recapitulation

The scheme of concentration suggested by Professor Dewey[2] attempts to make the social life of the child the core of the curriculum. This life gives rise to certain interests and problems. It is supposed that in the endeavor to satisfy the one and to settle the other the child may be led to reach out into all departments of knowledge that mankind has so far accumu-

[1] *Herbart and the Herbartians*, Part III, Ch. IV.
[2] *The School and Society*.

lated, and to avail himself of all the instrumentalities for research that have been discovered. On such a scheme, it is evident that the development of the social problems in the society of the school would naturally follow to some extent the history of these problems in the evolution of human society. However, as the school life is brought in contact with modern adult conditions at a variety of points, it is evident that the extent of recapitulation will be limited to such issues as are inevitable, and must be met before the child can appreciate and so come face to face with the emergencies of the present day. Everywhere the ultimate aim of efficiency must exert its selective power, abbreviating, modifying, and rearranging the problems that have come up to us out of the past.

The culture-epoch scheme not literally applicable even to the humanities

Thus, even though Professor Dewey's scheme of concentration is one that effectively brings science into unity with the humanities, and also offers a chance for recapitulation to play a part in reference to the central element of the scheme, this principle must of necessity be only a mere skeleton of arrangement, notable especially for the number of exceptions to it. If science balks at being presented in the racial order, even the humanities dodge, whenever possible, the influence of this principle of control. The conditions that demand a deviation from the plan of cultural recapitulation are well stated by Lange.[1] He points out the impossibility of recreating except in a selective way the cultural conditions of early peoples. They constitute adult conditions difficult even for the scientifically trained mind to comprehend from the point of view of those who actually dwelt in their midst. The child can absorb and sympathize with such phases of early culture as fit in with the social conceptions that he is taking in day by day from his modern environment. He sees antique civilization through spectacles that reveal only the colors of the glasses themselves,

[1] *Apperception* (De Garmo's translation), pp. 110–151.

—colors derived from the living conditions of to-day. He idealizes and glosses over the deeds of ancient men. Lange emphasizes the view that an elaborate subdivision of the course of study according to culture epochs is artificial and undesirable, and the fact that much that has been prominent in the history of culture would be positively detrimental to the child. In general he says: —

"In choice of matter from the historical point of view we discover all that is justifiable in Ziller's theory of culture epochs."

Summary

In summary, we may say that the idea of cultural recapitulation has been emphasized by the Herbartians especially. To them it constitutes the order of apperception of the culture material that the child should absorb. By employing a scheme of concentration the core of which was history, a subject easily treated according to culture epochs, Ziller succeeded in applying this principle in a thoroughgoing way to the curriculum. However, the order of evolution of social heredity is by no means an order that must or should be followed blindly in the education of the child. What is thus handed on is transmitted by this agency in order that it may be modified when need arises for so doing. Cultural recapitulation is not in many respects the necessary order of apperception in introducing present culture, and much that it would teach should be left out of education to-day. These difficulties appear especially when it is applied to science, which according to Ziller's scheme was subordinated to the humanities. Professor De Garmo separates science from the humanities and treats the latter in a measure by the plan of recapitulation. Professor Dewey suggests the problems that arise in the social life of the school as the proper core for a scheme of concentration. These problems come up to some extent in the order of

recapitulation, and they lead into the study of science and industry better than the historical study of Ziller's scheme. However, many historical problems will not arise in a school society of to-day, and the order of appearance of such as do will deviate widely from that of their rise in social evolution.

CHAPTER VII

LEARNING BY TRIAL AND ERROR

SECTION 23. *General notion of learning*

Learning as a process of inner reorganization

THE general analysis of the process of learning has already been given.[1] We have seen that it is based upon a resourceful action system, a variety of wants, sensitivity to lack of adjustment, and the power to utilize resources in experimentation. These factors all have an hereditary basis. Learning is, therefore, characteristically a process going on within the organism. It is essentially a matter of inner reorganization, for which environmental conditions furnish the stimulus. These external forces do not determine what shall be learned. They merely insist that something be learned that will enable the organism to deal with them successfully, — the alternative, of course, being elimination. Such outer guidance of the learning process is at best merely passive. The positive effort and the specific devices of readjustment all spring from within. The nature of these devices is determined by the nature of the learning organism, and not at all by the nature of the environment, which everywhere confines itself to the rôle of approving or rejecting overt results.

Replacement of outer by inner selection

We have seen that even the selective function of the environment has been absorbed by the organism which is able to learn. The environment selects by destroying the individual that reacts to it wrongly. The individual learns by eliminating the faulty reaction before the environment has completed its

[1] Compare §§ 9, 17, 18, 19.

work of selection by eliminating the individual who makes such a reaction. This power of anticipating and forestalling the selective activity of the environment is that sensitivity which was mentioned as the third of the factors involved in power to learn. It has further been characterized as affective consciousness. Disagreeable affective consciousness symbolizes the destructive effect of persisting in present courses. It is symbolic, individual selection that anticipates and so replaces natural selection.

Learning as a process of profiting by results, or the anticipation of results

Learning means, then, the power to profit by results. It means the power to readjust by making experimental reactions, and preserving the one that proves most successful, or, to state more literally the fact, the one that is least a failure. Failure is, indeed, always symbolic. Feeling does not permit the ultimate result of experimentation to be realized, otherwise there would be no learning for the individual, but merely destruction. Natural selection improves the race, but it cannot teach the individual. However, even if feeling stops experimentation before it has gone to the bitter end, we may yet speak of it as a result. Hence learning, which is the power of continuing to do the things that feel most satisfactory, is a process of profiting by results.

Accustoming not commonly conceived as learning

There is one phase of individual readjustment that has by some been thought not to be learning because it seems to lack this character. It is accustoming, or acclimation. Here conditions that were at first unsatisfactory, possibly even dangerous to life, come to be endurable or even innocuous, apparently not because of any positive reaction that wards off the attack of these conditions, but rather because of a passive change on the part of the organism that leaves it no longer susceptible to their influence. One naturally supposes that the body of the organism is subjected to physical or chemical changes that are the direct effect of the stimulus. The assump-

tion is that, if these changes go on slowly, they do not destroy life. Thus by a slow process one may attain safely a physiological condition that could not have been reached swiftly. An organism may by gradual modification come to endure safely extremes of heat or of cold, of darkness, of rarefaction or condensation of the air. If the degree of salinity in the water in which they live is increased by small increments, animals and plants may become inured to an amount of change that, if brought about suddenly, would destroy life. Thus we may accustom ourselves to eat substances at first injurious or even poisonous. The system comes to tolerate, indeed, to thrive upon them. We become immune to the toxins of various diseases. In the psychical realm, sights, sounds, touches, tastes, smells, and even pains, at first extremely irritating, may come to be utterly neglected or even pleasant, especially if the process of accustoming be gradual.

Mr. Hobhouse regards accustoming as a type of readjustment that is clearly distinct from learning.

"When after a certain experience the organism adapts itself better to a certain sort of stimulus, it has undoubtedly been modified by its experience, but it has not necessarily learnt anything by experience of results." [1]

Method of explaining accustoming as learning

It is possible, however, that accustoming may represent genuine learning. Professor Jennings,[2] making use of an idea derived from Ostwald, suggests that we may explain this process as one of selection from among a variety of chemical changes that are stimulated by variations in temperature, by poisons, etc. That change survives which makes possible the continuance of life by counteracting the dangerous katabolism set up by the unaccustomed conditions. In that event, we have an illustration of learning by trial and error. The variety of

[1] *Mind in Evolution*, p. 82. [2] *Behavior of the Lower Organisms*, p. 346.

chemical changes may be regarded as experiments toward readjustment, and that reaction which nullifies the dangerous effect of the stimulus becomes chronic, or habitual, the others disappearing by inhibition.

Such an analysis, it will be observed, requires that we should identify in actual cases of accustoming the presence not only of experimental chemical reactions, but also of a process of symbolic, individual selection, like that which constitutes the function of affective consciousness. It is in reference to the last point that the theory is most apt to rouse incredulity. Yet if accustoming does not involve this sort of selection, it cannot be called profiting by results or learning. The individual must have the power of inhibiting the useless or dangerous experiments and nourishing the successful one, or there would never be on his part any growth of ability to endure the changed condition. Instead of becoming acclimated, he would be destroyed.

Difficulty in this explanation

It would seem likely that accustoming represents, not a process of experimental reactions and selection completed in the individual, but rather a fixed hereditary reaction to changes in the conditions of life that are sufficiently common to make an inherited mode of adjustment to them desirable or even necessary. In that event, the power to become inured to a certain environmental change would be, not the power of making experimental reactions, but rather that of immediately setting up the right one so that in time the situation will be met. Natural selection would have eliminated all who failed to develop or to inherit the power to make this fitting adjustment. The experiments would have been individuals, each having a tendency to respond somewhat differently to the irritating conditions. Nature would destroy all that failed to react in such a way as to become accustomed.

Accustoming as an hereditary adjustment

However this may be, the suggested explanation of accustom-

Summary

ing as a genuine case of learning may serve our purposes in two ways: It reveals clearly the essential elements involved in learning, and it emphasizes the fact that all adjustments, even those of a process apparently so mechanical as that of acclimation, are the peculiar internal reactions of the organism, and not the mere passive effect of external conditions. Learning, then, must involve first the power to make such characteristic internal reactions, not simply as adjustments definitely assigned by heredity to specific changes in the conditions of life, but rather as mere experiments toward readjustment; and second, the capacity to profit from the results of this experimentation by selecting out the successful reaction, and thus forestalling the destruction of the individual. Affective consciousness, or something in function analogous to it, must be operative.

Section 24. *The evolution of feeling*

Three conditions of disagreeable feeling:

Affective consciousness, or feeling, means, as we have seen, an internal agency for selection. Through it we substitute for natural selection symbolic, individual selection. Thus learning, or profiting by results, becomes possible to the individual. It is true, in feeling we do not have the ultimate outcome of the experiment in reality. But we have this ultimate result symbolized in terms that to the inner life of the individual seem quite as important as the destruction or the preservation of life that they signify. In the course of its evolution, feeling may be said to attach to three main conditions. Each condition gives rise either to agreeable or to disagreeable feeling, according to circumstances that are, of course, directly opposed to each other. The primary condition of disagreeable feeling is the existence in the body of dangerous katabolism; that is, katabolism that threatens, if continued, seriously to injure vitality, or indeed, to destroy life. Agreeable feeling

(1) dangerous katabolism

is here a consequence of the checking or reversal of such destructive processes. The second type of disagreeable feeling is that roused, not by the actual existence of dangerous katabolism, but rather by the presence of impulses which, if carried out, will more or less remotely lead to such a condition. This sort of feeling inhibits a wasteful or injurious impulse before the doing of the harm has begun. Corresponding to it we have the pleasure that sanctions an impulse beneficial in its outcome. Feeling, always anticipative of results, is in gaining this second condition enabled to predict them when they are remote. The third condition of disagreeable feeling is the presence of conflicting impulses to action. The restoration of harmony in the inner life would here, of course, be a condition of agreeable feeling.

(2) premonitory states

(3) conflicting impulses

The second type of feeling rises out of the first by the growth of sensitivity to symbolic conditions, and by the determination of the feeling thus involved through the feeling characteristic of the condition symbolized or anticipated. Stimuli, not in themselves harmful, are yet indicative of the approach of harmful conditions, if these be not warded off. Hence, by association, the apprehension of these symbolic conditions become suffused with the quality of feeling that would ensue were the significances realized. If an organism requires a certain amount of light to carry on its vital processes, the appearance of a shadow in its locality will be an irritating stimulus, giving rise to feeling of the first type, and thus rousing a negative reaction. But when an individual upon which the diminution in quantity of light produces no vital effect reacts to a shadow, it is doubtless because of what the shadow means rather than of what it is. It means, for example, the approach of an enemy, and the organism simply transfers to the apprehension of the shadow the feeling associated with the injuries that this hostile creature is liable to inflict.

Two factors involved in the development of the second from the first condition of feeling

Professor Jennings explains this reaction to representative

The law of physiological resolution

stimuli as an illustration of his law of physiological resolution. States that succeed each other, owing to the succession of the stimuli that provoke them, may come to pass readily into each other, so that the stimulus to the first may without the aid of the other stimuli rouse in rapid sequence each of the following states. So, too, a condition aroused by a representative stimulus may come to pass rapidly into the state that accompanies the presence of the condition that is represented. In that event, the representative condition is so quickly resolved into one of vital change that it practically gains the intensity and the quality of the feeling that accompanies such serious disturbances. The symbolic state A passes forthwith into a dangerous one B. They practically fuse, and in effect A becomes as disagreeable as B was originally.

Its identity with that of irradiation of feeling

Professor Jennings has observed cases — for example, the unicellular euglena and the sea urchin — where stimuli that at first met no response came ultimately to receive one because they represent other more vital threatening conditions. The same general principle finds common enough an illustration in the transference [1] or irradiation [2] of the feelings in human experience. The uneasiness that was at first attached only to a certain state comes to accompany an earlier premonitory one. Feelings provoked by certain objects are thus in ways quite unaccountable to their subject attached to other objects. Introspection does not reveal the subtle associations through which many experiences derive their interest, their power to annoy or to delight.

Derivation of the third from the second condition of feeling

The third type of disagreeable feeling that we have distinguished is connected with the struggle of conflicting impulses to action. It is evident that this sort of a condition is a normal outcome of disagreeable feeling. Such feeling stimu-

[1] Compare Sully, *Psychology;* and Ribot, *Psychology of the Emotions*, p. 176.
[2] Compare Ziehen, *Introduction to Physiological Psychology.*

lates experimentation. If the experimenter possesses a resourceful action system, it is likely that many impulses will be simultaneously evoked. This is certain to happen when some impulses are at least partially inhibited as the result of a dim sense of the problematic character of their consequences. Thus an array of warring tendencies is marshaled forth, and the disagreeable feeling that evoked them irradiates into the consciousness of their conflict.

View that the third is the most general condition of feeling

So constant is this association in man between disagreeable feeling and a conflict of motor impulses that Professor Judd has declared [1] such struggle to be the sole condition of this sort of feeling. As has just been shown, the relation might be stated in the reverse way. A conflict of impulses normally results from disagreeable feeling. However, the inhibition and conflict of impulses is itself an unsatisfactory condition from the point of view of readjustment. It is only when such tendencies become coördinated, or at any rate, when some break loose from their inhibitions, that tension is relieved and satisfaction is felt. Thus, both from the point of view of the condition that provokes it, and the results that spring from it, the conflict of impulses is intimately associated with dissatisfaction. However, from the point of view of evolution, it seems evident that both feeling associated with dangerous katabolism, and feeling premonitory of such a condition if the impulse associated with it is carried out, should precede and furnish the basis for feeling provoked by a struggle of impulses. Therefore the list of conditions of feeling offered by Professor Angell [2] seems correctly to suggest the genetic order. According to this we have three sources of disagreeable feelings: (1) diseased conditions of the organism; (2) excessive neural stimulation; and (3) the checking or impeding of consciousness in the efforts to guide action.

Angell's three conditions of disagreeable feeling

[1] *Psychology*, Ch. VII.

[2] *Psychology*, Ch. XIV.

Summary

While not identical with the classification of the conditions of feeling offered in the preceding discussion, Professor Angell's list suggests the simpler as well as the more complex conditions under which this selective principle may be supposed to work. At first operative to check katabolism before it has gone too far, feeling rouses reactions that serve as experiments toward remedying this condition. Thus profiting by results becomes possible. Then, through the growth of greater sensitivity and the working of the principle of irradiation, feeling is enabled to forewarn against dangerous conditions before they have actually come to pass. Thus it inhibits impulses that might lead to destructive consequences, and provokes others in the search for one free from the taint of suspicion. Learning becomes more speedy. It forestalls injury more effectively, and the way is opened up for the avoidance of the dangers of actual experimentation. Finally, with the higher, more resourceful organisms, feeling becomes wedded to those conditions of conflict which furnish the foundation for ideational readjustment, and in this the anticipation of results and the avoidance of the wear and tear of actual experimentation are at a maximum.

Section 25. *Perceptual readjustment*

Cognition implies ideational readjustment

The essential feature of learning by trial and error is, as we have seen, the presence of actual as contrasted with mere ideational experimentation. But ideational readjustment does not Minerva-like spring suddenly into perfect operation. Indeed, we rarely if ever find it working without some assistance from the testing of actual results. On the other hand, whenever cognition anticipates the outcome of an impulse, there some degree of ideational readjustment is present, for, as we have seen,[1] cognitive consciousness has everywhere the task of learning as its fundamental function.

[1] § 18.

Functions of affection and cognition

It is important to note that affection is concerned just as much in anticipating the outcome of action as is cognition. There is, however, this difference. Affection merely foreshadows failure or success; cognition presents a neutral descriptive account of the outcome, — an account that may mean failure or success according to purposes and circumstances. The usefulness of cognition lies in that its material can be utilized in cases where the specific outcome of proposed reactions has never been tested. Affection registers the verdict of the actual test. Cognition so anticipates the result as to make possible a verdict without a test.

Cognition an enlargement of resources for action

We have seen [1] that cognition may by remembering the outcome of specific experiments strengthen the inhibitions or the approvals of feeling, thus assisting it in the formation of habits. This function is, however, merely incidental to its main one, which is to enlarge the action system by providing ideas of action based on past experience. Conscious memory saves what learning by trial and error loses. Our failures as well as our successes provide us with an experience which enhances our mental resources when again we learn.

Cognition not only provides resources, but it gives them in a form that enables us to appraise their value, at least to some extent, without actual experimentation. It furnishes ideas of action. These ideas may be related, organized, compared, and thus their relative practical value may be determined by purely mental operations. This process of selecting by thinking the idea that shall control action we have called, from what may be regarded as its perfected form, judgment. To have ideational experimentation, on the one hand, we must have experience manifesting itself in the form of ideas of possible action, and, on the other hand, the mechanism of feeling, which anticipates results already practically tested either in

Ideational readjustment as involving both ideas and judgment

[1] § 19.

the individual or the race, must be supplemented by some phase of the mechanism of judgment, by which we may forecast results that have never been specifically subjected to actual test. There must be notions of things to do, and the mind must be capable of bringing these into logical relations with each other. Instead of relying wholly on the test of the overt result, we must be able to submit our plan of action to some mental standard by which its reliability may be estimated.

Perception a genuine case of ideational readjustment

In perception, the simplest form of genuine cognition, we have an illustration of ideational experimentation in its beginnings. On the other hand, perceptual control is so dependent upon the suggestions of the senses, and so wedded to the guidance of the apprehension of results, that it presents to us the features of learning by trial and error rather than those of learning through ideas alone. It will be our task in this section to show from an analysis of perception that, while it functions as an adjunct of trial and error learning, it illustrates, nevertheless, a genuine case of ideational readjustment.

Conflict necessary to the functioning of ideas

The preliminary condition of ideational readjustment is, as we have seen in the last section, the inhibition of impulses. Only thus do we get a chance to put ideas in control of the current of action. But the mere checking of one impulse is not enough, provided it merely makes way for another. There must be a number of impulses in struggle for supremacy, and these impulses must be associated with ideas of their nature and outcome. The struggle of impulses may then be regarded as a struggle of ideas.[1] This conflict can be settled by a battle

[1] It may be thought that I am talking in terms of an abandoned phase of the psychology of Herbart. The idea, as with the English Associationists, is dealt with as an entity that struggles with others, and, perhaps, fuses with them, but remains through all in its simple essence the same. This view seems to atomize consciousness in an entirely unwarranted way. My treatment of the idea does not imply that it is to have such substantial identity. We have only to think of it as a living thing, a mental activity, that is not of necessity per-

under the rules of mental activity, — if you will, — of intelligence or of logic. Without a struggle of impulses, ideas get no chance to become adjusted to each other. Hence they do not function. If we can conceive them to be present at all, they are mere incumbrances to the impulses with which they are associated.

A perception may be defined as an interpreted sensation. Perception lifts sensation into consciousness by giving it meaning. The element of significance or relation comes from the past. It is that in the perception which is due to experience, to memory. It is, however, so intimately fused with what the senses give that one cannot tell introspectively where sensation ends and interpretation begins. The separation can best be effected by experiments in which the same sensation receives, because of a different context or mental attitude, a different interpretation. Herein also may be seen the function of perception. Since the same sensation may according to circumstances have several interpretations, and so several appropriate responses, perception becomes a process of attaching to a situation an interpretation which may be problematic or new, and in any case is sufficiently variable or unlearned to preclude an effective habitual response. Wherever such an habitual response becomes established, there perception abandons the field to automatism. Its function is to determine the interpretation of sensations by reference to their contexts, and this is ideational readjustment.

Perceptual interpretations always problematic

Their determination a matter of ideational readjustment

Perceptual interpretations are of many kinds. Two of the most important are what are known as recognition and localization. Recognition is noting what an object is, localization is fixing its position. Both are fundamental to the proper re-

Illustration in (1) the case of recognition

manently individuated, but still is an entity playing a real part in determining the direction of consciousness. This view, I take it, agrees both with the accepted notions of psychologists to-day and with facts of experience.

action toward an object in space. Each is a result of a comparison of sensory data more or less involved, although the processes of this comparison are not attended to and distinguished. If a wolf hears a sound, as of the crackling of leaves, many interpretations of its meaning are possible. It may be caused by the wind and so bear no message of importance. It may be the tread of a living creature, — an animal upon which the wolf preys, a fellow-wolf, a hunter. The reaction of the listener should be different for each of these. The sound, doubtless, suggests to the wolf more or less vaguely each interpretation. The first result is an alertness of attention to various sensory clews that may corroborate one among the many objects vaguely conjectured. This attitude may be supplemented by an experimental one. The wolf may move about, it may bring into play various senses, in the hope that some new development will furnish the suggestion that will determine which interpretation to take. Perhaps one interpretation may, owing to something in the surroundings or to the individual feelings of the wolf, seize the attention and determine a tentative action. However, the developments of a few moments may to an alert animal signify the need of an immediate reversal of this reaction. Instead of running away, as from a dangerous enemy, perhaps it should be pursuing some creature upon which it feeds.

(2) the case of localization

It will be seen that the condition of perceptual control is one of alertness; that is, one in which many interpretations are held ready to seize the focus of attention as new data come to the support of this or that one. It is in the corroborations and the contradictions of these data, in the correlation of them into a basis for a compromise or coördinated activity, that perception illustrates ideational readjustment. Such correlation is especially in evidence in localization. The locality of an exciting object is one of the most important of the data

upon which a reaction toward it is based. If an object is a foot away, our movements in reference to it will be very different from those toward the same object a mile away. If a cat pursues a bird, at a certain distance it crouches and creeps, at another it springs. These reactions are not dependent upon localization alone. What the object is, what accompanies it, where it is, — all combine to constitute an array of specific conditions that may be very complicated indeed. Yet each factor may be instrumental in determining the character of the response. The reaction of a sheep toward a wolf may depend on the distance of the wolf, the character of the intervening country, the presence or absence of guardian dogs or men, and so on indefinitely. As a rule each factor will find its reflection in the total movement of the sheep.

Complicated character of the perceptual process

To bring out more clearly the complicated nature of the data that enter into the adjustments of perception, we may note not only that the stimulus usually consists of many objects which must be recognized and perhaps localized in order to control action properly, but also that these processes of recognition and localization are themselves frequently a result of a correlation of data. We have shown how recognition may require the coöperation of several cues, and often involves quite a little experimental activity. Localization may be equally complicated. If it takes place through vision, it involves a comparison of the image of the object to be located with its known size. Moreover, the number and size of intervening objects, relative clearness, binocular disparity, the amount of binocular convergence, and many other factors enter in to determine by joint or majority agreement the position that shall be assigned to the object.

The process by which these various factors in perception are weighed and resolved into a practical decision is, of course, not, like that of reasoning and judgment, clear to introspec-

tion. Indeed, without experimental aid one would not be able to detect the factors themselves.[1] Yet, although obscure and not consciously recognized, these "premises" of perceptual interpretation are, nevertheless, taken account of, and where they are wanting or ambiguous effective perceptual control ceases. Illusions of distance arise because in the conflict of data certain unreliable ones overbear others. When we stand on the verge of an unusually high precipice, objects below seem like miniatures. Objects at a much greater distance but on the same level do not ordinarily seem smaller than they should. Since the experience of surveying things several hundred or more feet below is out of the common, the mind fails to read relative size immediately into distance, as it does in ordinary cases. There is a conflict among the cues as to the position of the thing, and the suggestion springing from the size of the image yields so far as the sense of distance is concerned, but reasserts itself, insisting that, if the objects are not far away, they must at least be very small.

Illusions as illustrative of perceptual "inference"

As memory evolves into greater retentiveness, the struggle to synthesize the various significances that attach to the sense impressions becomes fiercer. The ultimate outcome of this struggle is that the meanings are forced apart from the sensations with which they were at first so closely fused, and are lifted into independent existence as ideas. When this is done, we have passed beyond perceptual readjustment, and have reached the beginnings of conscious reasoning. In regard to localization we become conscious first of the fact that we are estimating distance, then of the various estimates that are in conflict, and finally of the data on which these estimates are based. Here, as everywhere, clearer consciousness arises because of its necessity as a means of readjustment. Perception

Isolation of interpretations as ideas

[1] Compare Stratton, *Experimental Psychology and its Relation to Culture*, Ch. II, "The Evidence for Unconscious Ideas."

attends in general only to those sensations that require mental readjustment in order that they may be interpreted properly. It evolves into reasoning in the endeavor to grapple with certain of these interpretations more securely.

Habitual nature of perceptual interpretations

In discussing the relation between consciousness and habit,[1] we noted that, while consciousness saves an account of the impulses that are eliminated in the formation of habits, nevertheless, not all such material is preserved. Moreover, the determination of what shall be retained rests upon the very laws of habit which eliminate certain impulses and establish others. We remember selected experiences, and these are in a sense habitual experiences. This fact is especially well illustrated in the interpretations of perception. The process by which these are associated with their sensations is at bottom essentially one of trial and error, and the result is a habit. As consciousness grows richer, however, the standard of selection to which interpretations must submit in order to stick to the cues that excite them ceases to be merely the overt outcome of following them and becomes to a considerable extent their agreement with other interpretations which are themselves to some degree established by the laws of habit.

The logic of habit and feeling in perceptual readjustment

The logic of perceptual readjustment is, for the most part, a logic of habit and of feeling. Habits of thought are thrust into company with other habits of thought. They can live if they can live harmoniously. Otherwise some must disappear. Often ways of thinking essentially inconsistent may survive because they never have been brought to bear upon the same activity in such a way that their inconsistency results in actual failure of readjustment. In that event certain interpretations disappear, not because they are inconsistent with established ideas, but because they do not work in practice. However, the repetition of such struggles, and the constant

[1] § 19.

Rise of conscious logic

recurrence of a settlement which conforms to principles of mental consistency, forces these principles before attention as selective factors which may in anticipation of the judgment of the event enable unreliable interpretations to be eliminated. Thus ways of thinking come to be rejected, not merely because they do not work in fact, but also because they do not work in thought. Ideas are submitted not only to the empirical, but also to the logical test, and ideational readjustment becomes self-conscious.

The sense of consistency among ideas is at first far enough from scientific criticism. It is a mere feeling of harmony or its lack, that operates, as feeling everywhere does, selectively. We have here what we have called a logic of feeling. The principles of consistency are felt, but not clearly cognized. However, such feeling frequently suffices to forestall actual experimental resolution of inconsistencies. The clear consciousness of logical requirements arises, as does the consciousness of the ideas which logic enables us consistently to relate, because of the pressure of the need of readjustment, the prevalence of error. Only through the development of rationality to take the place of mere intuition, or feeling of correctness, can the complicated and variable situations of human life be satisfactorily met.

Mental experimentation in perceptual readjustment

The procedure of perceptual as of all readjustment is one of experiment.[1] Experimentation consists here in the passing of a certain interpretation before attention. But if the readjustment is to be a mental one, this interpretation must not wholly control action; the movement that is provoked must be merely tentative; and the mind must remain alert to note any development that may confound or confirm the suggestion that attention entertains. In pure trial and error learning the experiment is an impulse. As we pass over to conscious

[1] Compare § 17.

learning, it becomes a mental hypothesis to be tested more and more by an ideational rather than by an overt test. The advance to the higher form of learning means also that attention, instead of being so much on the alert to note the external developments which experimental movements are bringing to pass, becomes more and more absorbed in the inner world of ideas from which it may expect to derive many if not most of its standard tests for truth. Overt and ideational tests

To resume, the characteristic features of trial and error learning are the actual experiment and the judgment of the event as indicated by feeling. The characteristic features of conscious learning are hypotheses, or ideational experiments, and the test of the judgment of experience, as indicated by conformity to ideas held to be true. The link between learning by trial and error and conscious learning is found in perception. Perception is characterized by attention to the outward, alertness to the outcome of tentative activity initiated by its suggestions. It submits its hypotheses to a test partly of overt results, partly of conformity to ideas. Its logic is one of habit and feeling. Yet, on the other hand, perception holds all impulses inhibited, at least partially, until its logic is satisfied. Its attitude is not quite that of reflective suspension of judgment, but rather that of alertness to many objective events that are felt to concern effective action. Such alertness is an ideational attitude that may be called the forerunner of critical reflection. In perceptual readjustment the ideas of action are not free ideas, but are wedded to sensory cues. The transition to conscious learning involves the analysis of perception, the separation of sensory cue from interpretation, and the conscious endeavor to estimate the reliability of the interpretation, which now of course is recognized as a mere idea. It further involves the discovery of various relations among ideas. The reliable ones are separated and fixed in memory, the un- Summary

reliable are eliminated. Lastly, the logical sense must appear, and there must be a clear grasp of logical principles by which the conformity of the plan of action to the mental standard of reliability may be tested. From felt we must advance to known consistency.

CHAPTER VIII

CONSCIOUS LEARNING

SECTION 26. *Factors in conscious learning*

ONE cannot emphasize too much the fact that what we find in practice is not mere trial and error learning, on the one hand, and pure ideational readjustment, on the other, so much as it is a combination of the two. From one extreme, where the resources of learning are blind impulses and the process is controlled by mere feeling of results, to the other, where the resources are ideas and where deliberation is brought to a conclusion only when a suggestion is found that conforms consciously to the accepted criteria of judgment, we find all sorts of intermediate processes. To some of these nearly every case of human learning can be referred. Such learning is rarely without perceptual control, in which we have the beginnings of ideational readjustment, and, on the other hand, it very seldom reaches pure reasoning.

Gradual nature of the transition from learning by trial and error to conscious learning

The phases of conscious learning may be roughly divided into perceptual, imaginative, and conceptual readjustment, the latter being in its perfected form reasoning. These forms are to be distinguished by the sort of material that makes up the resources in learning. On the other hand, the method of selection may be made a basis of distinguishing sorts of learning. Here we find such phases as resolution of struggle of impulses through the outcome of the interplay of forces in the body stimulated by these impulses; resolution by the control of attention through the perception of results, or by inner feel-

Kinds of experience involved in learning; of selective processes

ings or attitudes that assert their sway; resolution through conscious experimentation that aims to anticipate or test results; conscious, rational deliberation. These are but a few of many forms, to be described later, through which judgment passes on the way to clearly conscious control over the process of ideational readjustment. It is to be noted that all these phases of learning coöperate in a great variety of combinations. Imagination rarely works independently of perception, much less reasoning independently of imagination. So, too, the simpler phases of resolution are seldom entirely absent, even when judgment assumes its most deliberate forms.

Distinctness of resourcefulness and judgment

The two factors of ideational readjustment, mental resourcefulness and judgment, are sufficiently distinct to be capable of varying independently. The mind, when it develops within itself both an action system upon which experimentation can be based, and a capacity for selection by which such experimentation can be settled, necessarily brings each advance to bear upon the other. However, it is quite possible for resourcefulness to outrun judgment, and with some it would seem that the judgment excels the fertility of the mind. In a general way, mental development begins with mental variability. At first, this new material is subjected to the simpler methods of resolution and selection that have all along prevailed. Later on, new phases of judgment, made possible by the new sort of material which it is to control, appear.

Resourcefulness precedent to judgment

The precedence of resourcefulness to judgment is but an illustration of the general relation between variation and selection throughout evolution. It would seem that this relation is necessary and inevitable. How can there be selection until there is something to select, something to eliminate? How can judgment appear until ideas have been created to be judged? One can understand how ideas might function through an appeal to lower types of selection, even though

true judgment could scarcely be said to exist, but it seems impossible for judgment to outrun ideas. There can be no doubt that here we do have a general fact. However, it is also evident that in social intercourse the ideas may come from some and the judgment from others. Thus coöperation makes possible specialization in a talent that otherwise would lie in abeyance for lack of material to work upon. Some possess and cultivate a power that exercises itself largely in selecting and adapting the suggestions made by others.

Judgment may outrun fertility of mind

Both mental resourcefulness and judgment are capable of further analysis. Each involves a factor of content and one of attitude.[1] From the point of view of content, resourcefulness involves the experience from which can be constructed ideas of possible ways of meeting new emergencies, and judgment requires that we have standards of relative value that we can apply to these ideas in order to test their reliability as plans of action. The necessity of the attitude is seen in the fact that one may have much experience and few ideas. To convert the one into the other, the thinker must have a certain power of calling up his resources, which may be called the attitude of originality. Without originality experience is capital that cannot be liquidated or applied to new uses. It is mere habit of thought that cannot be separated from its mooring in a context of experience and floated away to another situation to take part in a novel service. The attitude depends partly on such an organization of experience as enables its recall in new situations, and partly upon an intellectual daring, a loosening of inhibitions, a feeling that stimulates to mental adventure. All these combine to enable the mind to range among its resources, converting what at first glance seem like

Resourcefulness as dependent on experience and the attitude of originality

[1] The word "attitude" is used very much as by Professor Judd. Compare his *Psychology*, and his article on the "Doctrine of Attitudes," *Journal of Phil. Psych. and Sc. Meth.*, Vol. V, No. 25.

foreign and irrelevant lines of thought into the source of ideas that startle in the effectiveness of their application to the emergency in hand.

Judgment as dependent on a knowledge of standards and the critical attitude

Just as resourcefulness depends not only upon a content of experience, but also upon an attitude of originality, by which this experience may be converted into ideas, so judgment is not merely a matter of a knowledge of the standards of reliability and desirability, but also of an attitude that enables these standards to be put into effect. We may call this the logical or critical attitude. It is essentially a tendency toward mental caution, toward inhibition. We feel that we must "look before we leap," that no plan of action should be allowed to prevail until it has stood the test of judgment. One may have very good ideas as to what sort of suggestions are most likely to prove wise in certain classes of emergencies, yet he may be so impulsive or so thoughtless that these ideas never get a proper chance to function. On the other hand, there are some in whom, as a result of nature or training or both, the critical, hesitating temper has grown so strong that decision becomes exceedingly difficult.

The attitudes as distinct from the content of thinking

It is important to recognize the reality of these attitudes apart from the materials with which they deal. In a sense, they are general in character, for, if they are natural or habitual to an individual, they recur whenever a new emergency is faced or new ideas are proposed. The existence of such states of mind has been ignored by the Herbartians and questioned by many modern psychologists under the influence of the view that the phenomena of consciousness can all be reduced to definite ideas and their interrelations. Thus they deal with the attitude as merely the outcome of the content of mind, and hence as attached solely to the definite experiences in connection with which it arose. It is regarded as incapable of functioning apart from them, much less of varying inde-

pendently. The content theory of mind will be discussed more fully later in connection with the chapter on Formal Discipline. For the present I wish to assume, what seems evident enough to analysis, that although the attitude and the content develop side by side, yet they are distinct. We are, indeed, incapable of being original unless we have some experience, or of being critical without something corresponding to a sense of standards; yet originality is not commensurate with experience, nor mental caution with an awareness of the conditions with which sound judgment should conform.

The critical attitude as varying independently of the knowledge of standards

Indeed, in regard to the critical attitude, it seems that one may be cautious and hesitating without any clear notion of the definite reason for such action. One may even display this attitude where no such definite reason exists. We have only to feel that the situation is in some way new and strange and that well-established habits do not fit readily. Under these conditions an idea of action may be inhibited, not because we recognize its failure to conform to the conditions of success, but just because it is new and untried as a solution of the emergency. We may even fail to recognize what the conditions of success are, but simply feel the presence of the unusual. In fact, the critical temper is primarily the outgrowth of fear and caution, and these feelings may well be regarded as fulfilling for mere perceptual readjustment the function that skepticism performs for reason. They inhibit action until further data are collected, or until the situation develops more fully. They are thus the condition for the accumulation of cognitive material to aid the mind in reaching a position that is capable of grasping and holding the attention.

Originality as varying independently of experience

Just as the critical temper may outrun the sense of the conditions of decision, giving us a Hamlet, or may be easily swept away by the pressure of ideas that invoke to action, as some think to be the case with Roosevelt, so originality may be out

of balance with the experience upon which it draws. Some possess a vigor and daring of thought so out of proportion to their resources for thinking as to produce the impression of making a very little go a long way, or of being unwarrantably presumptuous. Others are so lacking in originality as to seem barren-minded although their lives may have been crowded with experience. The study of how better to become the master of our resources Professor James has very suggestively declared [1] to be one of the principal fields for applied psychology.

Differentiation of standards from plans

It may be thought that the view that the contents of thinking can be separated into standards and plans needs defense quite as much as that which maintains the distinctness of the rational attitudes. In simpler forms of consciousness the experience that comes up is habitual experience. It has stood the empirical test and become in a measure standardized. However, as we have seen, the evolution of greater sensitiveness means the retention of that which has been less and less hammered in by repetition, and so selected out or standardized by mere practice. Thus ideas appear which need to be tested by their relation to other ideas that have already passed through the ordeal. The distinction between mere plans and standards is thus an inevitable consequence of the enrichment of the mind with material for effective ideational readjustment. The logical attitude, that develops into clearer consciousness with the multiplication of these resources, inevitably forces before attention the mechanism of its procedure. This procedure demands valuation of the contents of mind and a process of conscious judgment on the basis of such valuation. Hence standards are differentiated and consciously assigned their function in the mental process.

We may, then, regard the evolution of conscious learning

[1] President's Address, American Philosophical Association, December, 1906.

Summary

as essentially a matter of the development into greater perfection of these four factors. As the capacity to store experience grows, the mind increases its action system. Perceptual interpretations are supplemented by images of the imagination, and these in turn by ideas of relation, or concepts. The images and concepts become arranged according to the feeling, and later according to the clear apprehension of relative worth into standard and doubtful ideas. Doubtful ideas, when cast into the limbo of the rejected, are for the time being useless, but until then they are conjectures from whence ideational readjustment draws its nourishment. With the progress of conscious learning, the mind grows more and more conscious of the necessities of effective thinking. It comes to take more consciously the attitude of conjecture, of speculation, of invention. From simply waiting passively for such ideas as will to come to its aid, it deliberately goes out in search of them. It becomes consciously original. Similarly, the logical or critical attitude develops from the mere hesitation of mental timidity in the face of a new or as yet not comprehended situation into a clear sense of the function of reflectiveness and criticism, and into an attitude of unwillingness to lift its inhibitions upon action until the standards of judgment have been complied with.

Section 27. *The evolution of ideas*

Ideas as an addition to the action system

The evolution of ideas we have characterized as a phase of the expansion of the action system from which the resources of learning are derived. Experience and ideas constitute the culmination of an extraordinary array of instrumentalities, — muscles and their attached structures, the nervous system with its powers of coördination, the artificial environment with its tools, shelter, clothing, capital, etc., and the social

environment bringing the forms of coöperation to the aid of achievement. To utilize these instrumentalities ideas are in some cases necessary, and nearly always of value. They everywhere exist to facilitate the process of readjustment. Their function is always to save flexibility in spite of the inroads of habit, to secure resources against the devastations of selection. In this task they succeed so well that in many respects they more than make good the loss. The loss of power to readjust involved in acquiring certain habits is more than replaced by the adaptability furnished by the experience gained in the same process. In the brain certain associations that lead to action are atrophied and for the time eliminated, but in their place are established associations that lead to thought, to ideas. Thus it happens that, when we may again have need of experimental activity, these ideational associations function. Instead of random diffused activity, we have thought which relates to the nature and results of such activity. Ideation, through its own conclusions, either rouses again the corresponding movements or strengthens the inhibitions by which they are held in abeyance.

Selection may contribute to resources

It is important to note that the process of selection, while in general antithetical to that of the development or the invoking of resources, is, nevertheless, not only functionally dependent upon these processes, but also contributory to them. We have seen[1] that the development of habits contributes to the power to learn such new adjustments as may have them for a basis. Whenever the new situation has in it something like the old, there the habits attached to the latter may become a fruitful basis for experimentation toward readjustment. The value of habits is, therefore, to be estimated, not only on the basis of the efficiency gained from their use in the emergencies for which they are specifically adapted,

Illustration in the case of fundamental or abstract habits

[1] Compare § 19.

but also by considering the extent to which they can be used in learning. Thus we may distinguish between fundamental habits and such as have few relations and are, therefore, without much value for readjustment. Now the habits that are fundamental may as a rule be characterized as abstract. They are associations of stimuli that constitute more or less minute factors in total concrete situations with responses that rarely or never appear except as integral parts of a coördinated movement. Such habits are a result of analysis and selection. The analysis ordinarily takes place when one applies an old habit to a new situation. The result is some measure of separation of the elements of similarity. On the one hand, attention is enabled to concentrate upon the point of likeness between the two situations. On the other hand, there is effected at least a partial isolation of such fragment of the original habitual response as applies to the new case. The like factor in the stimulus and the like factor in the response are, under the pressure of experimental learning, forced to cling together, and to become abstracted from other factors in the concrete situations in which they appear.

Abstraction incidental to the correction of unsuccessful reactions

Such abstract habituation is merely the forerunner of abstract thought. In both cases we have an association between a cue and a response. The cue is either a sensation or an idea. The response may be either a movement or a process of thought. Without such an association analysis and abstraction would be impossible. A new situation is felt to be like a familiar one. An accustomed reaction is in consequence made, with the result of partial failure. Experimentation saves such of the old response as is successful. Again this response is stimulated by a situation in some respects the same as the preceding ones, but in others different from them. Further analysis of the response is thus brought about. The result is that, not only are movements broken up into constituent factors,

but also stimuli are analyzed into such elements as constitute the appropriate motor cue to these reactions. To apply the response properly, it must be associated with the stimulus that is the proper signal for it. Hence this signal must be attended to in some way.

Value of conscious discrimination of critical stimuli

It is evident that many of our fairly abstract habits are suggested by stimuli that are not so much consciously discriminated as felt. However, such control is of necessity unreliable where we are shifting constantly from one concrete situation to another. To rely upon feeling is to be unable to determine ideationally the character of the situation. Hence only by actual experiment can the appropriateness of the response be tested. Thus with the growth of reflectiveness the cues to fundamental abstract habits are themselves abstracted and associated consciously to their proper responses. Cognitive consciousness here illustrates its universal function, — that of enabling an anticipative determination of the outcome of experimentation.

Abstraction a selective process and contributory to resourcefulness

The process of analysis and abstraction by which fundamental habits or thought associations are singled out is evidently a selective process. In so far as these elements are material for readjustment, the process of selection favors the expansion of the action system, the resources for experimentation. Selection is not merely eliminative; it favors enrichment, in so far as its products lend themselves to new combinations that would be impossible without them. An individual equipped with a store of such reliable habits of action and thought is enabled to achieve syntheses of skill or foresight immeasurably beyond the possibilities of one who depends on the concrete.

But while the process of selection contributes to resourcefulness, it cannot operate unless it is provided with material. The analysis upon which the coördinations of skill are based

is dependent upon a large equipment of muscles and a nervous system capable of effecting the separation of large mass movements, the selective establishment of minuter associations, and the recombination of these into elaborate syntheses. So, too, in the evolution of ideas, each phase of analysis and abstraction springs from conflict and contrast, and this in turn is based upon a more sensitive memory, which masses the cognitive material from which the conflict arises. Thus both in mind and body the accumulation of resources precedes differentiation, and differentiation involves elimination and selection as a basis for analysis and abstraction.

Resources necessary as a basis for selection

The two principles, first that new analyses are founded upon enlarged resources, and second, that, although a product of selection, the abstractions that result from these analyses ultimately foster a gain in mental capital, are illustrated at each step in the evolution of ideas. Indeed, so important are these principles that the entire advance from perception to rational systems of thought seems to be fundamentally an illustration of them. Perceptual interpretation is an outgrowth of a memory sufficiently sensitive to retain a vague sense of several meanings that a given sensory cue may suggest. It is this conflict in interpretation that forces the specific nature of each upon consciousness. The rise of perception involves enough of consciousness of the novelty or of the ambiguity of the situations it concerns to provoke doubt and hesitancy and hence to stir up alertness. Perception itself necessitates enough clearly conscious interpretation to furnish a basis for experimentation that aims to discover, in the first instance, the nature of the stimulus, and only ultimately the proper response. As a cognitive process, its purpose is to settle a mental issue by mental data. Hence it experiments to get these data, trusting that they can be obtained in time to forestall serious results. We do not perceive those stimuli to which

The evolution of ideas dependent on (1) more sensitive memory: (2) selective processes that assist memory

we invariably react in one regular way. Automatism reigns here. But when a stimulus means many things according to context, then it is necessary for cognition to sweep under its inspection a conscious representation of this context in order in any degree to anticipate the outcome of the event.

Perception illustrates this, for, (1) it is based on memory of conflicting interpretations,

In a preceding section [1] an attempt was made to indicate the function of perception, and the manner in which it combines ideational readjustment with control by the apprehension of results. Here the important consideration is that in its genesis and development perception is a process of sensing and later apprehending certain significances in order that they may have their weight in determining the true nature of the situation. It is, therefore, founded on the memory that retains enough of the past to offer conflicting interpretations of certain stimuli, and thus provoke an attentive experimental attitude toward them. With the increase in the sensitiveness of memory, the conflict sharpens, and the data become more clearly differentiated from each other. This clearness promotes mental comparison, and thus favors a mental decision as to the exact character of the situation and the proper method of treating it. Thus the development of perception from vague interpretations to the clear apprehension of the nature of the things perceived is a result of the expansion of mental resources that springs from an increase in the sensitiveness of memory.

(2) these interpretations are selected and abstract

On the other hand, the interpretations of perception are for the most part such as have been repeated many times, and so attached to their sensory cues by the same process through which habits are formed. They are selected interpretations, fragmentary glimpses of the things to which they refer. They give just that which is significant in the determination of the proper reaction; just what can be utilized in provoking hesitancy, alertness, experimentation, or in furthering a mental

[1] § 25.

decision as to the classification of the thing which enables successful treatment of it. The clear apprehension of these interpretations is a consequence not only of the grip of memory, but also of concentration of attention, of discrimination, of selection. Perceptual interpretation may be ranked among the unqualified abstractions. Moreover, it is this abstract character that enables it tc be seized with sufficient distinctness and associated persistently enough with its sensory cue to be raised to the level of a genuine idea. Thus the gradual lifting of what is at first a mere vague awareness into clear consciousness is a result of the synthetic activity of memory and the analytic activity of selective attention. Each agency fosters the work of the other. Saving makes possible selection, and only the selected is saved. Only by selection is the interpretation raised into that conscious clarity which enables it to enter into mental comparisons and so to prove itself of sufficient use to be worthy of being saved.

Clear-cut perception dependent on imagination and the analysis it makes possible

It is not likely that anything resembling clear-cut perception of the nature of things appears until free images have come into consciousness. So long as mental doubt is to be settled by an appeal to new perception, corroborating some and rejecting others of the interpretations suggested for the situation, so long the logic of this process remains a logic of felt coherence, and it is unnecessary for clearly defined ideas such as can be consciously compared to appear. The perceptual condition of mind is not one of clearly defined awareness of the nature of objects, but rather one of vague feelings of a variety of motor cues which must be held at the threshold of attention until that perception appears which shall by felt reënforcement lift one of these cues into the control of attention. When, however, free images have come to play a considerable part in the life of consciousness, perception, doubtless, is for the first time able, by comparison with these images and the reconstitution of its

interpretations under their influence, to attain the sharpness of conscious definition that characterizes the perception of man. Thus distinctness comes into the mental life because of the accumulation of material by which conflict, contrast, and definition are made possible. In turn, this definition, this clearness that results from contrast and analysis, is itself the mark that characterizes material now gripped by the mind in such a form as to constitute a genuine resource for the readjustments of consciousness.

Imagination as based on more sensitive memory

Imagination is born in the freeing of the perceptual interpretation from its dependence upon sensation. The mind begins to have ideas not fused directly with impressions coming from the sense organs, but only indirectly suggested by them. At first there is no conscious separation of perception from image. The mind is not aware that some of the ideas are of things actually present to sense, while others lack this quality. This distinction between the perception and the image is a phase of the development of judgment, and will be dealt with later. Here we may note that images are a product of a more sensitive memory than is displayed in perceptual interpretation, and that this memory fills the mind with other materials than those that are fused with sensation. The uncertainty of a doubtful interpretation, which is characteristic of perceptive consciousness, is supplemented by mind wandering among ideas more or less clearly cognitive of these interpretations and their conditions and results. Instead of waiting for further perception to settle the issue raised by doubtful sensory cues, the mind rushes forward to anticipations based on past experience, that may, when they are compared, either make possible a decisive interpretation of the situation without further experimental perception, or at least hasten and abridge this process.

But while imagination is a result of sensitive memory, it

fails to give, at any rate in its simpler forms, anything like a complete representation of the sense qualities of any object to which it refers. So far from being a literal recall of past experience reproductive imagination gives only a partial distorted representation. This character is due to several causes. The perceptions from which the images are derived are themselves partial and more or less inaccurate. The image simply exaggerates the peculiarities of its antecedent. Moreover, its variations may be due in part to the influence of the context of ideas and perceptions in which it is recalled. Association with these brings about both abstraction and distortion of the original mental content, which imagination is said to reproduce. Again, the physiological processes underlying imagination may be subject to change because of modified vital conditions, such as nutrition, disease, etc. In fact, what is known as reproductive imagination is often quite as much a variant from its original as though it were what we call constructive or creative imagination.[1]

The image a variant from the original perception

The process of distortion involved in reproductive imagination, so far from being a mere falling away from the accuracy and clearness of perception, is in point of fact a very important condition of greater clearness and accuracy, not only in ideas, but also in perceptions themselves. Images provoke action, and, if they are inaccurate, the results are likely to be unexpected. In that event, the defectiveness of the images is likely to be not only felt, but also apprehended. The correction of error by thought comparisons means that the ideas are not merely felt to be wrong, but known to be wrong in specific respects. Thus the image gains in accuracy and clearness. This gain is reflected into perception, which acquires a new definiteness, correctness, and cognitive quality. The interpretations that in their original fusion with sensation were

Such variation productive of further discrimination and sharpening of memory

[1] Compare Ribot, *Essay on the Creative Imagination.*

vague and unanalyzed become clear-cut and ideational in quality. Thus analysis, although it seems based on the inaccuracies of memory in its work of literal reproduction, results ultimately in a great gain in the clearness and accuracy of what is remembered.

Resultant enrichment of imagination and memory

In such fashion the image, in spite of its inaccuracies, or perhaps because of them, constitutes an experiment through which we learn to apprehend clearly the truth. Because the suggestions of imagination are merely conjectures,[1] and do not always or even usually turn out safe guides to action, a process of reconstruction is set up, which results in a definition of all the contents of consciousness, with an extraordinary coincident gain in cognitive quality. Perception acquires a background. The sensations that operate as its suggestions become overshadowed by the definitely apprehended meanings that cluster about them. To see a thing means now to have far clearer apprehension of its visual quality than the eye unaided by imagination is capable of giving. Not only this, but perception suffused with imagination gains a background of a variety of sense qualities and meanings, each the result of earlier analysis under the pressure of experimentation. With this background a perception becomes in a true sense the perception of a thing; that is, an object with many qualities and relationships and significant for action in a great variety of contingencies.

Types of imagination differentiated by judgment

The distinction between different types of imagination is a result of a logical process of evaluation. Mere images are tested, clarified, and corrected. This process of correction is a phase of the evolution of judgment. With the development of this power one begins to distinguish images the sources and the correctness of which are as yet undetermined from those known

[1] Professor Baldwin discusses this thought experimentation and its results in a very minute way in *Thought and Things*.

to represent accurately things as they are, have been, or will be. Further analysis sets apart images known to reproduce the past experiences of the self, and so to constitute memories in the narrower sense of that term. Images known not to represent facts are further classified according to whether they represent the possible or the probable, or, perhaps, are the utter fiction of mere fancy. All these distinctions and many more are the result of judgment operative upon the image. In itself, apart from its reliability and use, the image remains a mere variant of perception cut loose from dependence upon sensation.

Imagination enlarges the resources of thinking by fostering a tendency toward variation, by clarifying the cognitive states through the mental comparisons that it makes not only possible but necessary, and by bringing about a reconstruction of perception, enhancing the cognitive quality of its interpretations, and enabling an organization of masses of content about the unity of the thing perceived. This work of reconstructing experience into the fullness and the accuracy of a truthful account of reality is enormously aided by the development of the sense of relationship into distinct existence as conception. Perception and imagination contain associations, but in such forms of thought these associations are not made the special object of distinguishing consciousness. They are merely felt. Thus, while they rule the course of thought as they do the mechanism of habit, their presence is not cognised, and so the reliability of their control is not criticised. When once these relationships have been lifted into consciousness, they constitute an addition to the resources of thinking, not only because they are a new phase of consciousness, in many respects more valuable in controlling action than either perceptions or images, but also for the reason that they are a tremendous engine for reconstructing perceptions and images into richer, more reliable, and more available materials for ideation.

Conception an aid to the reconstruction and enrichment of experience

Conception a revelation of the dynamics of consciousness.

As with all advances in the realm of ideas, the consciousness of relations is made possible because of more sensitive memory. The materials that enter into consciousness become through this agency clearly enough defined for their complicated groupings to be taken into account. We note their coexistences and their sequences, their likenesses and differences, because we can remember well enough to recall the antecedents after we have experienced the consequents. These groupings govern the progress of thought, and hence they are determinative of the action dependent on the outcome of this progress. If the associations are reliable, action founded on them will prove successful. False associations bring failure. The mind, experimenting with the effects of their control, becomes aware of their existence and significance by realizing the bad consequences that may spring from them when they are unreliable. Thus we are enabled not only to correct the erroneous grouping of ideas and the corresponding habit of action, but also to add to our stock of ideas the notion of the specific associations that are at fault and those that are correct. The dynamics of consciousness is revealed to the mind that is governed by it, and such self-consciousness is the parent of enlarged power over the processes to which it refers.

Relationships distinguished into psychological and logical

The concepts of the mind may be classified in a great variety of ways. We have abstract and concrete, class and individual concepts. We have those fundamental concepts that are called the categories of logic, and may be contrasted with the concepts of the classes and things that are ranged under them. For our purpose it may prove most fruitful to divide concepts into those of psychological and those of logical relationships. Psychological relationship is the dynamic relationship that actually governs the course of ideas in the mind of an individual. It includes the relationships of habit, of similarity, or of any other sort, provided these exert a controlling influence

upon the process of thinking. Logical relationship is any relationship that may be detected among objects (or the corresponding ideas) by a comparing mind. The logical relationships are indefinite in number. They include likeness, difference, and all the relationships of quality, number and all the relationships of quantity, the relationships of dependence and interdependence, the relationships of thought to reality. In short, there is no relationship that may not be made the object of comparing intelligence. Hence the logical relationships include the psychological ones, for thought may apprehend the principles that govern its course. Endowed with a retentiveness that enables it to preserve some notion of the experiences that are drifting into the past, it saves itself from mere submergence in the present moment. It lifts a section of its own experience before its attention. It reflects upon its own procedure, and in so doing the psychological relationships are made the object of consciousness. They become logical.

Psychological relationships can be made logical

On the other hand, the important question arises, Can the logical relationships become psychological? Can the course of thought be influenced by all the various interconnections that a reflective consciousness discovers to exist among objects, and so in some sense among the ideas that represent them. Professor James declares that in so far as the order of consciousness is determined, not by the order in which the sense impressions appear, but by some inner principle of association, the sole controlling factor is habit.[1] Among the principles of interconnection worked out by the English Associationists he admits only one, that of association by contiguity in time, as having any real domination over psychological processes.

Can logical relationships become psychological?

At the outset of the discussion of this issue, it may be well to recognize the fact that the possibility of ideational readjustment rests on the capacity of logical relationships to dis-

[1] *Principles of Psychology*, Vol. I, Ch. XIV.

Ideational readjustment dependent on the reconstruction of psychological by logical relationships

integrate and reorganize thought and so to substitute their order for the mere successions and coexistences of habit. If habits of thought cannot thus be reconstructed, then cognitive consciousness is left without a function. It is a mere useless appendage, of no assistance to feeling and impulse in the process of learning. All learning remains mere learning by trial and error. Ideational experimentation and selection depends on the ability to break away to some extent from habit, both as regards the mental resources and the judgment as to their availability. It would seem, therefore, that in assuming conscious learning to be a fact, one of necessity is involved in the belief that the logical relationship, which it is the function of mental activity to bring more and more clearly to the front, should become incorporated in the mechanism by which the attention is seized and, in consequence, the progress of thought and action determined.

"Partial recall" an illustration of such reconstruction

Professor James admits something of the same sort when he discusses what he calls partial recall. Of the total context of thought at any moment, one element, he affirms, may predominate over others in suggesting power. Thus the mere mechanical agencies of habit are replaced by preferences, interests that seem to spring from the mind itself. This preferential activity becomes operative upon the material that the dynamic associations of consciousness have caused to appear in such a context that mental comparison of their relationships becomes possible. Habit drags many things before attention. Judgment enters in to arrange them, to evaluate them, and to assign to each its relative value in determining the further course of thought. The relations that govern judgment, and that are by it brought to the front, are logical relationships. Once fixed by attention, they become active forces, undermining old habits of thought if they be illogical, and replacing them by new ones. Thus they become what we have

called psychological or dynamic relationships. What the mechanism of habit brings into the mind, the logical activity of thought passes in review. Only that which survives this selective process can continue as effective habit. The psychological associations determine what resources shall through suggestion be called into the mind. The logical associations determine which of these resources are fitly called. The rejection of any tends to eliminate the association by which it was suggested. Hence the only associations that can remain are those that stand the test of logic. Through their selective activity the logical associations make sure that the psychological associations shall correspond to themselves.

Approved logical relationships alone possessed of reconstructing power over habit

It may be objected that if we define logical relationship as any relationship apprehended to exist between objects, it includes both relations of coherence and those of incoherence. It is the business of judgment to banish the latter out of consciousness and not to install them in control. Hence not all logical relationships, but only those that are valid, are converted by ideation into psychological relationships. This view is undoubtedly true, and it is evident that we have here an ambiguous use of the word "logical." We mean by it something contrasted with the non-logical, *i.e.* that which is not made the object of attentive consciousness. Again we may contrast the logical with the illogical, or that which reflection cannot approve or abide. To avoid possible misunderstanding, it may be well to say that only such apprehended relationships as are logical in the sense of being approved by judgment can as a result of reflection be made to eliminate or modify earlier habits of thought.

The awareness of relationships as distinct from the things related, or conception, is thus a tremendous force for the reorganization of the associations among ideas. These regroupings mean new comparisons, new analyses. Moreover, each

The concept as the material from which effective mental creations are constructed

analysis means the distinguishing not of an isolated but of a relating factor, a concept. The concept is singled out because of its apparent validity, universality, and fundamental character. It represents an association that claims logical coherence and that survives for a time the verifying test of repeated experiences. It is abstracted because it occurs in many contexts and is a point of stability in all. This universality is correlated closely with the quality of being fundamental, or that from which many things can be derived. The analysis of a mass of concrete experiences into detailed relationships means reducing them to forms which can be used in the greatest variety of new combinations because they are sound, coherent, and fundamental. The greater the variety of colors and color properties an artist has learned to distinguish, the greater his resources in the elaboration of new effects. The greater the knowledge of mechanical laws and devices possessed by an inventor, the richer the suggestions that rise in his mind when a new mechanical problem is presented to him to solve. So, too, the brilliancy and originality of a philosophical system rests on the analysis of experience into philosophical concepts, which can then be woven together into new syntheses. As Hegel contends, new systems are always compromises, but compromises that are truly synthetic and, therefore, original. If a writer would increase his power of invention in regard to personality, it is necessary that he should begin by analyzing the characters that he meets.

Conception as strengthening memory: (1) by escaping exceptions; (2) by constructing thought systems

Conception further enlarges resources by strengthening the memory upon which it itself is founded. Recall depends upon what we have called psychological associations. We have seen that reflection destroys such of those as cannot meet its logical tests, thus reconstructing the dynamic groupings of consciousness. But these reconstructed coherent associations are far more powerful agents of recall than the associa-

tions of mere habit. Logical memory outstrips in effectiveness that which is merely mechanical. Its associative links are not constantly attacked and undermined by critical thought. On the contrary, they are constantly being strengthened by use in other connections. Moreover, they are coherent with other associations. They join with them in the organization of systems of thought where each item strengthens the grip of memory on all the rest, as in a well-built arch the weight of each stone strengthens the stability of the whole structure. To change the figure, we may compare such systems of thought to great buildings held together by steel frames. As the strength of such edifices is dependent upon the strength of the frame and the manner in which it binds the structure together, so the grip of memory upon a thought is dependent upon the clearness and coherence of the concepts by which this is organized.

Illustration in the concept of self

The notion of a self with a consistent history, involving physical appearance, habitat, occupation, family, character, and so fitting in at every angle, not only to other facts of the self but also to those of the world outside, is an example of such a thought system. So strong a grip does it possess upon the details which it organizes that by its logic it can often supply any gap that the memory of habit may be unable to fill. Indeed, the memory of a reflective consciousness consists largely of things that it knows must have happened or must be so. As the child grows to maturity this sort of memory grows stronger, and, in consequence, memory in general increases in power in spite of a probable loss in mere mechanical power to retain.

Language as illustrative of the values of conception

The organizing and reconstructive power that springs from ideas of relations receives remarkable illustration when these ideas are associated with words. The topic of language will be treated in a special chapter. Here, however, it may be noted that words are of enormous assistance in enabling us to single

out the relations that it is of importance for us to consider and to retain. Moreover, through recombinations of the elements thus distinguished, it becomes possible for us to accumulate an enormous fund of new experience from others. Our resources are thus increased by the experience of society. The memory of the individual is supplemented by the memory of the race. Written language, by recording an account of individual experiences as they take place, preserves an accurate description of an immense amount of material that would otherwise be lost or distorted. Thus history and science become possible, the words together with the relations they express drawing together in one enormous system of available material practically all of the significant experience of the race.

The "silent areas" as the organs of conception

The physiological basis of these ideas of relation is to be found in what are called the association areas of the brain. These occupy about two thirds of the cortex of the hemispheres, and constitute what have been called the "silent areas." Thus the larger part of that portion of the brain which is correlated with consciousness is devoted to the formation of connections. These connections go not singly but rather in groups, giving systems of thought and coördinations of movement. However, the analysis and isolation of the elemental associations is necessary, if one is to reorganize them readily. Moreover, such ready reorganization means, as we have seen, cognition of the factors involved. Hence the silent areas must concern themselves not only in associating, but also in thinking about associations; that is, in conception. The formation and use of ideas of relation may, therefore, not inappropriately be called the principal function of the human brain.

Summary

To recapitulate, the evolution of ideas sums itself up in the three phases of perceptual interpretation, imagination, and ideas of relation, or concepts. In this expansion of power two factors are everywhere in evidence; first, increase in sen-

sitiveness of memory, in sheer power to retain and recall; second, cognitive selection, which in the field of perception and imagination is commonly called discrimination, and in that of conception, analysis and abstraction. As memory grows stronger, the mind is more and more apt to have conflicting impulses or interpretations in response to the suggestions of sense. Herein lies the condition of perception. The ideational selection of the proper one among these conflicting elements means at first merely the corroborating or eliminating effect of further experimental perceptions. This process is brought to greater perfection as the interpretations with which it deals become more sharply discriminated. The clear awareness of the perceptual elements is forced upon us because of the necessity of discriminating such of them as are critical in determining the reactions that may be used in new situations or such data as serve in a variety of emergencies to identify various specific factors, the proper treatment of each of which is known. To recognize, to classify, to diagnose, one must have a cognitive account of defining characteristics, and the clearer this account, the more effective it is in recognition. But this cognitive account is a selected, a discriminated one. It is saved from confusion by being separated from the mass of vague interpretations with which it is at first associated. Its practical value as a guide for action leads it to be differentiated by an act of attention, and this separation raises it into clearer consciousness than before.

Little by little such of the various interpretations of sensation as need to be used in recognition are subjected to this process of clarification through selective discrimination. This work is especially favored by the rise of imagination. The free image is a result both of memory which holds many things in mind besides the interpretation of the sensations of the moment, and also of a fairly clear cognition of this free material.

Since many clear-cut and conflicting images cannot be fused with present sensation, they must needs be apprehended as free ideas. But the accumulation of imaginative material means more opportunity for ideational conflicts and selections, and so further sharpness of contrast among ideas, further classification of cognitive material. This enhanced distinctness in images reacts upon the perceptive states, substituting for vague interpretations a clear cognitive apprehension of things and their qualities. Red is never so red as when the image comes to the support of the sensation. Imagination reconstructs perception; selective discrimination sharpens and so reconstructs both; and memory furnishes the materials upon which selective discrimination works.

As the materials of imagination become richer in quantity and clearness, comparison is able to do more than simply to cognize contrasted sense quality. The relations of these sense qualities become sufficiently in evidence to be distinguished. One remembers well enough to compare comparisons and to apprehend likeness of relationship where there is unlikeness of content related, or unlikeness of relationship where content remains the same. These relationships are abstracted and compared with each other. They are evaluated, and such as stand well the test operate to reorganize selectively the psychological connections that govern the course of thought. Reflection, working upon materials brought before it by the dynamic force of habit, discovers logical principles that compel such habits of thought as fail to meet their requirements to disappear. Thus the course of thought is reconstructed according to logical principles, — principles that are reiterated, supplemented, and interconnected until they constitute a grip upon their material that is well-nigh inexorable. The memory of habit is enormously strengthened. Indeed, where habitual memory fails, we are able to reconstruct our pasts,

filling our memories with what we know must have taken place. Language, oral and written, comes to our assistance, and the systems of thought which through the binding and reconstructing force of conception the individual has been able to build up in his own peculiar experience are enlarged to include the experience of the race. The ideational resources of the individual come to correspond to those of society.

Section 28. *The evolution of judgment*

Preliminary sketch of the factors in judgment

The evolution of judgment, as distinguished from that of ideas, is essentially a matter of becoming conscious of the process of ideational readjustment, with a consequent addition to its effectiveness. One comes to realize what thinking is and means, and as a result thinks better. To become rational many factors and processes must be made the subject of attention. As we have seen, one must make the distinction between mere plans of action and the standards to which these must be submitted. The standards themselves must be ranged in the order of their relative importance, and the principles by which they are brought to bear upon plans exploited. Again, the reasoning attitudes must be brought before the focus of attention. One must realize the importance of experimentation both in thought and action, if one is to get adequate material upon which judgment may be exercised. One must become critical; that is, aware of the importance of caution and deliberation in making up one's mind.

Ideational readjustment: (1) by inhibition or reenforcement of impulses;

The process of ideational readjustment may be said to take two forms: First, ideas may inhibit or reënforce each other; second, they may combine with and modify each other. Ideas are inhibited by being banished from the attention, very much as impulses are eliminated when their results are unsatisfactory. The perception or the idea of a disagreeable conse-

quence that may be supposed to follow the carrying out of a certain idea will tend to rob it of motive force; or, what is the same thing, to drive it from attention. Similarly, when the perceived or thought consequence is agreeable, the suggesting idea will be confirmed in the possession of attention, at any rate until it initiates action, and further developments make necessary new thought and action. If one were entertaining the thought of calling upon a friend, the perception that he was passing along the street might inhibit or corroborate one's purpose according to whether the friend were going toward or away from his home. Again, the perception that his friend was going away from home might not destroy the purpose of meeting him, but merely modify the method of realizing it. Instead of going to the friend's home, one might go to the place whither he is supposed to be bound. Here we would have an illustration of the synthesis of mental data, with a corresponding coördination of movements. Both forms of ideational readjustment are constantly illustrated in perceptual control. Moreover, the higher mental processes may be analyzed into similar inhibitions, reënforcements, or correlations. The idea of a new related datum may affect a purpose quite as much as the perception of a new fact. One's purpose to call on a friend will persist, disappear, or be modified by the thought of the possible or probable movements of the friend during the day.

(2) by synthesis of impulses

Conflict of physical impulses the forerunner of ideational struggle

The forerunner of ideational resolution or readjustment is to be found in the conflicts and reënforcements of many muscular movements set in motion simultaneously. We have seen that the primary condition of readjustment is inhibition of some movements in order that others may be experimented with. Such inhibition may, however, be only partial, and the new movements may not be suffered to usurp absolutely the control of the body. Partial inhibition means the possi-

bility of many conflicting impulses. The arm and hand of Cranmer, thrust into the flames in order that it may be consumed before the rest of his body, is not mildly compliant to the will of the sufferer. It is tense with the conflict of muscles which are commanded by various stimuli to do very different things. Such movements may, however, tend not to destroy each other but to combine, as in the coördinations of balancing, walking, riding a bicycle, etc. Here many movements are aroused and enter into interplay, with the result that none is ultimately banished, but an adjustment is reached in which each performs a service.

From control by the feeling of results to control by the anticipation of these

The final outcome of such intramuscular struggle is, of course, under the control of the feeling and the apprehension of results. Where cognition has little material by which a suitable synthesis of movements can be worked out beforehand, the various impulses are not very effectively inhibited, but rather are permitted to work out their own destiny in the overt results. When, however, ideas become more in evidence, the progress of impulses into movement tends more and more to be checked. These impulses flow into ideas, which struggle toward a readjustment that may constitute a basis for a fairly effective coördination of movement. Thus, as blind experimentation becomes replaced more and more by ideational experimentation, specific stimuli become in new situations less and less likely to result in immediate movements. One ceases to be impulsive, and grows thoughtful, deliberate, at any rate when one is dealing with an emergency. However, the study of involuntary movements shows that we probably never reach a state in which impulses get no immediate expression in movements. The tendency toward speech as we carry on a train of thought is evidence of the strength of the primal association between muscles and any disturbance in the nervous system.

We have already treated perceptual control as involving a transition from the selection of impulses by feeling of

Alertness as indicative of the beginning of ideational control

results to selection by cognitive anticipation of these. The characteristics of the perceptual state may be summed up as follows: Inhibition of impulses combines with clearer cognition to bring about a mental conflict of interpretations, a sense of ambiguity or uncertainty concerning the nature of the situation and the proper response. The outcome of this is alertness, which is directed toward any data that may clear up the ambiguity. Such data may come from the development of the situation, the mere progress of events, while the perceiving animal remains observant, but otherwise passive. They may, however, be sought by experimental movements, the aim of which is to obtain material for an ideational resolution of the ambiguities involved. The data thus gathered together interact in the ways just described. The suggestions that spring from them corroborate each other, or render each other untenable, or, perhaps, combine to suggest an interpretation in which the presence of each is recognizable.

Internal factors affecting the result of the struggle of interpretations

In addition to the data furnished by the external senses, other factors springing from within the organism coöperate to determine the outcome of the mental process we are considering. Temperament, feeling, habit, all tend to sway the interpretation in the directions that they favor. A hungry animal would prefer for a doubtful case the interpretation, food, rather than any other. An animal timid, either from disposition or from temporary condition, will incline toward an interpretation that smacks of danger. After the external senses have given all the evidence that one can expect from them, there still remains in many cases several possible interpretations for an object, each of which fits one of a number of possible internal conditions of the perceiving organism. What sort of a being a man is to a wolf depends very much on the way the wolf feels at the time, or what sort of a wolf it may chance to be.

The struggle among interpretations in perception is essentially a struggle for the control of attention. The attention cannot concentrate except by eliminating all save coherent interpretations. The correlation of data that perception seeks is a felt coherence, not a distinctly apprehended one. Its logic is therefore the logic of feeling and habit. The feeling involved is that third type which we have described[1] as accompanying the struggle of impulses or ideas. So long as the conflict remains, one feels uncomfortable. Pleasure springs from reconciliation, from concentration. The feeling of coherence is partly a toleration of interpretations that have habitually gone together without misdirecting action in appreciable ways, partly a dawning sense of logical coherence that may replace or corroborate the synthesis of habit. The feeling of logical coherence cannot get an opportunity to display much if any influence on the course of thought unless the paths of habit are checked. It is in the ideation which follows such a check that the vague sense of logical relationship which we have called the logic of feeling gets a chance to disintegrate and reconstruct the associations of habit.

The control of attention by the logic of habit and feeling

We are now in a position to distinguish sharply three lines along which judgment develops. They are as follows: (1) the growth of the attitude of mental experimentation; (2) the growth of evaluated and evaluating thought material; (3) the growth of the critical attitude. The attitude of mental experimentation is that which we have described as originality. It is the attitude which throws one into the position of accumulating material for ideational readjustment. The first form of such experimental activity we have described as related to perception, although it extends to reasoning as well. It is activity roused in doubtful or new situations, and directed toward obtaining new sense data by which the nature of the

Three factors in the growth of judgment. (1) Growth of mental experimentation. Its relation to originality. The search for new sense data

[1] Compare § 24.

situation and the proper response may be discovered. One moves about, thus gaining a different point of view. A variety of senses are brought to bear upon the situation. One may seek the point of view of others as indicated by their actions. Indeed, the first resort of the socially dependent being is to the interpretations of authoritative companions.

The search for relevant ideas

Such experimentation becomes supplemented by the activity of imagination and reason. These powers surround the apprehension of the situation by a multitude of ideas that are divorced from present sensations and may be only remotely associated therewith. The interrelations of such material enable one to arrive at results which reflect upon the present situation such meaning as to enable a decision about the proper mode of treating it. The attitude that summons forth such material is just as truly an experimental one as is that which stimulates the search for new sense data. Indeed, the two attitudes ordinarily combine. One thinks out reflectively such consequences of a certain interpretation as may be tested by critical observations of the senses. My friend whom I wish to interview is found to be away from home. I wonder where he has gone, and call up among others the conjecture that he is bound for a certain railroad station. This idea satisfies my sense of coherence. I recall further that my friend's office lies on the way to the station, and that he is likely to drop in there as he passes. It then occurs to me that I may catch him there by telephoning. This I do, and thus resort to a sensory test to verify or overthrow the conclusions of mere thought.

Relation of originality to cognitive resources and to the critical attitude

The attitude that favors the resort to new sensations or ideas in the endeavor to experiment toward a solution of an emergency is the attitude of originality. It becomes more active as one becomes conscious of the value of such experimentation and accustomed to resort to it. Originality bears,

of course, the closest relation, on the one hand, to cognitive resources and, on the other, to the critical attitude that by its dissatisfactions forces readjustment. The attitude of mental experiment is favored by such an organization of resources as promotes recall. Hence the organization of experience by selective correlating processes, since it associates this material in permanent, logical, and practically useful ways, is an important asset of originality. Nothing, however, can definitely replace that attitude of mental adventure, or unrest, of desire to know as well as to do and to be mentally as well as physically active, without which the resources and the sense of the emergency would fail of producing their most fruitful results.

(2) Growth of evaluated and evaluating ideas

The second factor that contributes to the rise of judgment is the growth of evaluating materials. The perceptions and ideas that come into the mind must range themselves according to reliability and desirability, and we must become conscious of these values, the reasons for assigning them, and the logical methods by which the comparisons and syntheses of ideational readjustment are brought about.

The sense of novelty as the simplest form of the standard

The consciousness of values may be said to begin with the mere sense of the newness of certain situations which stimulates mental activity in regard to them. As one's power to feel and to cognize the unusual grows, he becomes capable of initiating thought processes without waiting for the rough shocks of failure that come from reacting to these situations automatically. The consciousness of the new, the strange, is the simplest form of the standard. It means that which as yet is uncertain, unsolved, — the problematic as contrasted with the habitual. The train of thought provoked by the apprehension of an emergency is apt to involve perceptions or ideas which are fairly familiar and suggest responses that are in a measure habitual. At first the determination of which of

these ideas shall gain the upper hand and control action is largely a matter of habit and feeling. Moreover, the resources of thinking are at first so meager that such ideas as appear are likely to be descriptive of very common experiences which are very like or very closely associated with the present emergency. It follows that whatever action they suggest is likely to prevail. The issue of the applicability of such ideas to the situation in hand is not raised. Only such as have applicability are likely to get into the mind.

The grading of ideas according to relative desirability and practicability

But as the resources of intelligence increase in number and variety, it becomes increasingly possible to have ideas, which, however suggestive they may be of desirable consequences, are not practicable in the present situation. If this situation be well exploited by the mind, any idea that aspires to control will have to be coherent with the mental context constructed through such exploitation. It must, therefore, be not only a desirable idea but a practicable one; and practicability means not only agreement with fact in general, but also coherence with the present situation. To a hungry cow the idea of green pastures would be alluring, but the wisdom of being controlled by such an idea would depend both on the existence of its object and the possibility of reaching this from the present location.

Grading by habit and feeling

An individual capable of having many ideas which vary in their value as guides for action will inevitably come to exercise some sort of selection among these. If an idea is never useful, one may be sure that it will be eliminated altogether; that is, will be forgotten. Such ideas as are useful occasionally and according to circumstances will tend to be recalled. When they do appear, it is necessary for the mind to determine in some way whether they represent a satisfactory combination of the desirable and the practicable. At first this determination is — to reiterate an oft-repeated idea — largely a matter

of feeling. One feels that a certain idea represents a more satisfactory feasible plan of action than any other before attention. Such feelings are partly a result of trial and error learning, and so represent habitual ways of thinking. In part, however, they are the result of a sense of relationships, not quite clearly apprehended, which are able, as we have seen, to reorganize associations, in ways different from those of habit. An idea of the attractiveness of going home that would habitually start movement in that direction might in a strange place and after a long journey be negatived by a sense of the futility of any effort to return there. Here habit is nullified because it does not fit in with the prevailing context of thought.

The consciousness of the standards of grading and of the laws of coherence

The feeling of coherence is itself dependent upon the extent to which the standard by which it is determined has been established in the mind. To an individual with little or no sense of distance, direction, and general spatial arrangement, the idea of home would be just as likely to evoke an endeavor to go thither when one has traveled so great a distance as to make return impracticable as it would when one gets into a somewhat strange place in the immediate neighborhood of his abode. A little child might start for the desired haven without any appreciation of the relative possibility or impossibility of getting there. One with more experience might merely feel the impracticability of such action, without, however, knowing just why it should be so. The development of the concepts connected with space means that one has a basis by which judgment is able to determine in a clearly conscious way the practicability of many movements, and to guide them, if they are feasible, to a successful conclusion.

Summary of stages in the growth of the knowledge of values

The growth of evaluated and evaluating materials has been traced through the following steps: (1) the mere sense of strangeness that makes one aware of an emergency; (2) the sense of relative desirability and practicability among com-

peting ideas that depends upon habit and felt coherence with certain standards of thought rather than upon a clear consciousness of the reasons upon which preferences are based; (3) the definite consciousness of logical procedure. In general, the standard of judgment is that consistent system into which experience persistently falls. We have in this standard two factors, consistency and persistence, which constitute the essence of all tests for truth. The system of knowledge must hang together, and there must be no exceptions to its constituent principles. When these characteristics of truth are brought to consciousness, we become aware of the essential principles of logical procedure; we apply consciously what may be called the empirical and the logical tests of truth. The empirical standard of truth means that whatever is true must agree with experience; that is, it must be founded on experience and be verified by experience. It must persist. The logical standard means that whatever is true must cohere with everything else that is true. It must be consistent.

The empirical and logical tests of truth

Early forms of the empirical test

The empirical test finds its simplest form in the processes of trial and error learning by which habits are formed. When it first rises into consciousness, it is as an appeal to the customary, the traditional, that which is authoritative because it has stood the test of practice. Any idea that can get the support of custom and precedent at once has an extraordinary advantage in the struggle to capture judgment. The empirical test antedates the logical one. It comes up to ideational readjustment from simpler forms of learning, whereas the logical test finds no use except in a struggle among ideas. The habits of an organism must cohere in so far as they cross each other's paths. Otherwise they could not work. But incoherences among habits are corrected not by an awareness of their inconsistency, but by the failure that springs from their inability to work together. We learn to coördinate our habits, because

otherwise they would be ineffective. Thus at this stage of learning the empirical test is the only one necessary. Whatever conforms to it must be as consistent as the demands of practice require.

The logical test as coherence with authoritative sense data;

In perceptual readjustment the logical test appears in the corroborations and contradictions of the data that come from the various senses while one is exploiting the nature of a situation. In this process the datum that fails to cohere with the mass of evidence is eliminated. However, some data may be more weighty than others. Some animals trust to smell as a final authoritative test. Touch usually has precedence over sight, while sound is more frequently suggestive merely of the presence of something that should be attended to than determinative of its nature. The establishment of relative authoritativeness among the senses, so far as this takes place in the lifetime of the individual, is a matter of experience and habit, and so of the empirical test.

as social acceptability

A second phase of the logical test appears in social intercourse. Even before the advent of articulate speech, animals get their cues as to how they should interpret situations, and what should in consequence be done, from observing the actions of companions. When speech appears, the resort to the consensus of opinion becomes the dominant form of logic. The true becomes the socially accepted. Wherever conflict arises among opinions, there relative weight is determined, as it is with the data of the senses, by the appeal to experience, to practical success, and so to custom or the empirical test. The opinion of the majority will, other things being equal, have the greater weight, but individuals may gain precedence by the same process by which habits are formed.

When memory becomes strong enough to grasp a great mass of ideas in addition to the present data of sense, the logical problem first comes clearly before consciousness. One re-

The rise of ultimate standards of truth; *e.g.* spatial arrangement, laws of nature, etc.

members many cases in which coherence was attained among various data and by a variety of methods. He distinguishes these methods of logical procedure, and compares them from the point of view of relative effectiveness. The question is raised as to the propriety of accepting the verdict of the majority, or the customary domination of the data of this sense or of the opinions of that individual. Certain principles of judgment emerge, themselves clarified and justified by the experiments and verifications of practice, yet serving to discountenance any specific custom or precedent that fails to harmonize with them. Thus, having reached a notion of what is possible in the way of spatial arrangement, one would discredit any evidence, no matter how authoritative, that tended to put two things in the same place at the same time. We reach the conception of laws of nature, and, as Hume declares, no mere testimony could convince us that they have been violated. The notion of one's personality arises with its background of experience, all of which must be arranged consistently in a time series and according to the probabilities of the history of a life. Such a systematic self-consciousness becomes the basis for testing the truth of any idea that concerns it. Memory is, as we have seen, largely a reconstruction, through the sense of relations, of that which is consistent with the general system of past things in the history of the race or of the individual.[1] Memory proper, or the ideas that one has of his own specific past, is largely a product of such reconstruction. Thus the standards of thought are a basis, not only for eliminating the ideas that do not apply to the solution of any specific mental problem, as, for example, knowing one's past, but also for suggesting ideas that are pertinent, but would otherwise be unthought.

The standards of thinking include all the categories that we

[1] Compare § 27.

have mentioned as the objects of the consciousness of relations. As part of the machinery of judgment they represent not mere relations that we think about, but also the valuation that is placed by thought upon these. Space, time, the relations of qualitative consistency, of quantitative consistency, of causality, etc., make up a set of conditions to which the contents of thought must conform, if they are true. Through them laws of nature and the objects of the physical and mental world are fixed in definite places in that system of reality which constitutes the standard to which all judgment refers.

Reaction of a knowledge of ultimate standards upon tradition and authority

The elevation into clear consciousness of these logical relations makes possible the weeding out of an enormous number of opinions that prevail because they result in action that is, on the whole, rather beneficial than the contrary. Such opinions may be said to be sanctioned by the empirical test. They work in practice, although for reasons quite different from what their believers suppose. Such persons may confuse one fact with another that is likely to accompany it. In the cure of disease one is apt to attribute to the medicine that which is really due to the regimen that accompanies its use. If an opinion is widely entertained in society, one is apt to suffer consequences that are at least disagreeable if he be skeptical about it. Thus the idea works in practice because society compels it to. Authority cannot make a false belief true, but it can make the part of prudence to be the acceptance of the falsehood. These inconsistencies in the judgment which is based on the empirical test alone begin to be weeded out when the individual man gets a wider array of facts and a firmer grip on the principles of consistency. Thus both the man and the race pass from an age of custom, tradition, and authority over to one of criticism, argument, and individualism. The beliefs that are sanctioned by habit and convention are found not to be consistent. They are subjected to a

ruthless process of selection, in which many disappear. At such times the prevalent emphasis upon the principles of logical coherence is apt to cause them to be elevated above the empirical test of truth. It is assumed that mere thinking, without reference to experience or practice, will give truth. Thus Greek philosophy soon came to the conclusion that the senses gave only contradiction and illusion, and that reason alone could attain the reality. They exalted the principle of consistency to such an extent that they conceived the world of ordinary experience and practice not to be worthy of study or interest because they did not find it capable of a ready formulation in a coherent system of thought. Thus the reason that was in the first instance invoked as a guide to practice asserted its supremacy by denying the significance and worth of any practice except that which took no account of worldly consequences; that is, of concrete human experience. The empirical test was swept away.

Rejection of the empirical for the logical test

In the return movement toward empiricism the logical tests have often been underrated. We have never gone back to blind traditionalism, but in our logical discussion we have sometimes assumed that experience and not thinking, practice and not reflection, are the sources of knowledge. But knowledge is an adjunct of conscious learning, and not of readjustment by mere practice, or trial and error. It is that consistent system of thought which springs, not from experience alone, but from experience organized by logic and so capable of anticipating the results of practice. The empirical test is the basis of all learning, but without the coöperation of logic we cannot have conscious learning. In the consciousness of the interrelation of these two standards judgment comes to appreciate its true function.

Fallacy of underrating the logical test

This appreciation enables the mind to attain the highest form of the critical attitude. We may call this the attitude

(3) Growth of the critical attitude

of deliberation. Criticism begins with inhibition, — and inhibition which at first is founded upon positive failure, but later in evolution comes to be stirred up by the sense of novelty in a situation, so that one hesitates and investigates or reflects before he acts. Thus there appears that alertness which we have already emphasized as a phase of the attitude of originality. Corresponding to it is the critical attitude of doubt. As the fund of ideas grows, it comes to be supplemented more and more by reflectiveness which is sustained by the sense of inconclusiveness. When the meaning of logical procedure has been clearly grasped, these attitudes attain the form of deliberation. The attitude of deliberation means that one is fully aware of the principles upon which judgment is based and will not decide until conformity to them has been reached. This does not mean that decision must wait a plan that is entirely satisfactory. If deliberation be always carried to that extreme, it may reach indecision. It is only necessary that one should have the power to reflect as long as reflection is likely to be profitable rather than injurious, and that decision should fix upon that plan which, all things considered, is the wisest that has been suggested.

Summary

Description of reasoning

Judgment, then, reaches its highest form in deliberate reasoning. This section may, therefore, be summarized by a description of reasoning, in which the process of evolution that we have traced culminates. Reasoning means a pause of reflection. The critical attitude is alive, and roused by the sense of an emergency, the mind has thrown itself into an attitude of experimentation, of original endeavor. Experimental perception may supply a mass of data. Experimental ideation supplements, perhaps swamps this with its own products. At any rate we have a mass of material struggling for attention. Professor Titchener calls this material an "aggregate idea." The process of reasoning involves the logical

resolution of the aggregate idea into a coherent decision, that can satisfactorily to judgment seize and hold the attention. Moreover, to have reasoning we must be conscious of this logic; there must be apprehended and not merely felt coherence. This means that the aggregate idea must be clearly separated into ideas that are evaluated in reference to their desirability and practicability, and ideas that have as yet to pass through the process of evaluation before they can be applied to the present emergency. There must be standards and plans. The standards must include a mass of facts about things, persons, places, events in the history of the physical, social, and mental worlds, laws of nature, — all gathered together in what may be called the system of reality. These facts have been evaluated by previous processes of thought. They have satisfied, in a measure at least, both the empirical and the logical tests of truth, and their relative standing in the system of reality is in proportion to the extent to which these tests have been applied and met. Further, the standards must embrace a clear consciousness of the principles of coherence, such as those of space and time and the categories of logic, so that when new ideas are judged one may know not only that with which they are compared, but also the principles that underlie the process of comparison. Especially must one realize the relative importance and specific functions of the empirical and the logical tests of truth. Otherwise, that which has the better empirical proof may be rejected because of logical inconsistency with what has an inferior justification from practice. Finally, the critical attitude, strengthened by a consciousness of the value of reasoning and its mechanism, must assert its sway so effectively that no decision is reached that is not a product of conscious assent, and of the conviction that reflection has done its best under the circumstances.

CHAPTER IX

THE EDUCATION OF THE REASON

SECTION 29. *General problem of educating the reason*

Evolution from recapitulatory to rational education

THE culmination of the evolution of education is in the education of the reason. In its simplest form education makes simply for readjustment in the individual. When, with the evolution of rejuvenation and of society, a problem of saving acquired characters and social heredity arises, education assumes this function and becomes recapitulatory, conservative, readjusting the individual, but preserving the existing adjustments of the race. Finally, however, there appears in the individual a capacity to readjust that seems capable of preserving itself against the encroachments of habit. With the growth of this function its potency is brought more and more clearly to the attention of men, and education gradually interests itself more and more in the endeavor to foster so effective an instrument. Rationality stands out as the primary aim of culture. The school ceases to think mainly of definite adjustment, and comes to emphasize especially that power to readjust which may rightly be regarded as the most valuable quality the man may have.

Paradoxical nature of the training of the reason

That it is possible to educate the reason is a common assumption. Yet it is not easy to demonstrate the success of modern endeavors in that direction. Education that aims to create habits, either of action or of thought, with an eye to their specific efficiency, can without great difficulty appraise the results of its efforts. It is easy to see when the habits are formed,

and not very hard to estimate their utility. But since reason is invoked only in new situations, and these by the very nature of the case are unexpected, a preparation for reasoning seems paradoxical. Indeed, it would appear that he who reasons well simply utilizes in unusual ways what he learned primarily for other uses. In other words, what was cultivated in him was specific efficiency, and education must rely solely upon inborn talent for the adaptation of such resources to the unforeseen. Even if resources could be acquired merely because of the vague hope that on some occasion they might be utilized, the process would seem like wanton waste when so much is to be learned that makes for definite uses as well as merely possible ones.

Rationality an example of the natural tendency to vary

Paradoxical as the education of the reason may seem, it involves merely an attempt consciously to affect factors which are everywhere in evidence, as the basis of power to readjust. When nature would readapt a species to its environment, nothing can be done unless the stock in question possesses the power to vary, whether that power be displayed orthogenetically, heterogenetically, or in mere chance variations. If an individual is to learn, he must have, as we have seen, a resourceful action system, and this includes not only power to do many things, but also the ability to do them in response to situations which they were not designed to meet. Thus when we come to consciousness and to reason, we do not find any exception to the general rule in the fact that the foundation of these functions should lie in resources which derive their origin from no specific attempt to perform the tasks to which later they are found to be so well adapted. Readjustment is invariably a process of selection among materials that have been, for the most part, in use in other connections, and were all originally the outcome of an innate potentiality of creation.

This inner potentiality does not seem, however, to be utterly beyond the influence of directive agencies. There is at times about the variation of species and the accumulation of resources by individuals what appears like an appropriate preparation for the emergencies that are to be. The expansion of inner powers seems here not to be a mere chance affair, but orthogenetic. We have seen that the selective process has a reaction upon the power to readjust along dependent lines of development. The selective encouragement of growth in a certain direction means the development of a tendency to further growth along the same line, or of a form that can readily vary further in the same general way. Well-selected habits are a basis for new habits formed by coördinating them. The action system of man is, doubtless, by ages of selection eminently well fitted for the greatest variety of those emergencies that are likely to arise in his environment. In the field of consciousness the same fact is clearly illustrated. The process of selection by which perceptual interpretations are fixed, images discriminated, and ideas of relation abstracted is a source of extraordinary gain to the resources of thinking. Everywhere, then, the accumulation of resources seems to receive positive guidance from the processes that have determined the value of similar resources in the past. And if selection does not guide positively, it may do so negatively. It may, by eliminating those who vary in certain directions, root out all but those who tend to develop in approved ones. If the possibilities of development happen to be limited, the destruction of some means the restriction of variation to the residual direction. The logic of the disjunctive syllogism here converts the denial of certain alternatives into the affirmation of another, provided the potentialities of the organism enable it to produce such an alternative.

Examples of the effective control of this tendency

It would seem, then, that nature had afforded to man an

Curiosity as directive in the acquisition of the most useful experience

example of providing with considerable selective skill materials characterized by availability when readjustment is necessary. The power of cognition is, as we have seen, merely a saving of what may prove worth while in conscious learning. But attention and cognition instinctively direct themselves to points that are, on the whole, likely to be involved in the later problems of the mind. The instinct of curiosity seems to have no other utility than this of provoking attention and the accumulation of knowledge about things in anticipation of its actual use. Curiosity seems to cling to the other instincts, especially to such as in their nature or in the methods by which they are satisfied are likely to be affected by variable conditions. It is, of course, especially aroused when one fails to gain one's instinctive wants. However, we are curious about that which has as yet offered no problem of readjustment to any other instinct except that of curiosity. Moreover, the extent of our curiosity in any field is not in proportion to the immediacy of the need of readjustment therein. Thus the instinct develops apparently to provide a permanent interest in the accumulation of that sort of knowledge which is on the whole most useful in new situations. Through it the process of gathering experience is not left to the direction of chance emergencies, but goes on along broader lines. One learns more than is necessary for the moment, and about things which at the moment are of no practical concern except that one wants to learn them.

Methods by which education can assist reason

The education of the reason means a conscious endeavor to supplement and to guide the work done under the influence of the instinct of curiosity. Curiosity enlarges the circle of interests, and thus leads to a broader, more reliable equipment of knowledge than would spring from the emergencies of the other instincts. Education can seize these interests and expand them. It can exercise supervision over the kind of ex-

perience that the young obtain, to see that it is fundamental and not merely incidental, that it is universal rather than particular, and that it is comprehensive and not confined to a special field. It can direct attention toward organizing this knowledge in ways most likely to promote recall in new situations. It can cultivate the attitude of invoking this knowledge, and the power of applying it critically. Thus man by his conscious effort carries on the work of nature in providing material for learning. The selective control of the process of acquiring experience renders its results far more widely useful for reasoning than if they have been gained at haphazard. To deny that one can educate the reason means that here the elevation into consciousness of a process that hitherto has been carried on by merely natural forces shall fail of bringing with it the gain in effectiveness that usually accompanies this step in evolution.

Two general principles regarding the culture of the reason: (1) Process more important than product

As a preliminary to a more specific treatment of our topic, two general principles regarding the training of the reason may be laid down. In the first place, since the materials for reasoning are gained in the course of effecting readjustments, their acquisition is for the most part merely incidental to the purpose immediately in hand when they are acquired. It follows that for the culture of the reason process becomes of more importance than product, reasons are of greater concern than the conclusions that we derive from them, and the description of a situation is of more ultimate value than the habit of dealing with it effectively. We learn habits in spite of our mistakes; we learn to reason because of them. The comprehension of that in the situation which makes a certain response effective, and of that which in other responses is the ground of their failure, is what makes it possible for any piece of learning to be a source of thinking power in future situations that are different but possess like elements.

Definite nature of the results of attention to the process of learning

By saying that for the culture of the reason process becomes of more importance than product, it is not meant to emphasize any mere abstract power of reasoning that may be supposed to result from this process. On the contrary, the results that attention to the process of learning bring are quite as definite, as concrete, and as positive as are the habits of thought or action at which the learning process immediately aims. The knowledge of the reason why three times four are twelve is as definite a matter as is the fact itself. If one wishes to know this product, the habit of thought and action which mechanically yields it does not gain in effectiveness from the knowledge of its reason. If, however, one desires to attain a new product or to verify the dicta of mechanical memory, these reasons become of prime importance. They are definite resources of great value in dealing with new situations.

Attention to process and the culture of the logical attitudes

In addition to this great mass of descriptive and explanatory knowledge that springs from attention to the process, we gain from this same source in power to take the logical attitudes. One gets in the habit of thinking, and with that goes a gain in the tendency to be both original and critical in dealing with new situations. Here again it is intended to maintain that one gains not any vague abstract power, but rather a very definite mass of habits and emotions that determine the direction of attention and the activities of thinking. The nature of these and the methods of cultivating them will be taken up in a special section.

(2) Mental enrichment should precede training in the logical attitudes

The second general principle regarding the culture of the reason is that everywhere the acquisition of materials should precede the endeavor to arouse the logical attitudes. It is evident that the boldness of originality will quickly be tamed into the commonplace if one has no resources for it to summon forth. Herein lies no danger and no need of caution, except to warn the teacher that original creations should not be ex-

pected to spring, like a bolt from the blue, out of empty minds. But it is different regarding the critical attitude. The education of a child may begin with inhibitions, and may continue to emphasise them at the expense of positive thought and action. Necessary as is the critical attitude, to attempt to develop it before the child has any resources of experience to criticise is to encourage a timid, hesitating, indecisive temperament. One is paralyzed before he begins to think. Or, perhaps, for lack of positive material upon which to exercise its influence, the critical attitude may fail to become a real inner force, and remain attached to certain external commanding agencies which must be in evidence before it is displayed. In matters of moral discipline this alternative is especially likely to appear. The child is taught to control himself before he has any substitute for what he is forbidden to do. He is thus reduced to helpless passivity, or driven to invent cunning devices to dodge the penalties that disobedience involves. In any event, the control is so foreign to his active nature that he never exerts it except from compulsion. The only genuine control consistent with activity is the control of choice, and this cannot appear until one has accumulated material upon which it may act.

Summary

We may assume, then, that the reason can be cultivated. Paradoxical as it seems, nature offers us examples of preparing for the unexpected, or the emergency. She does this in rejuvenation, in the capacity to learn, in cognitive consciousness, in the instinct of curiosity. Nature even shows an appropriateness of preparation, since what is provided as capital for readjustment is found to include, on the whole, that which is more likely to work than not. There is an orthogenesis about the evolution of the action system. The materials of social heredity are selected for the progress as well as for the perfection of the individual, and curiosity displays its activity

in fields especially likely to prove fruitful of devices in subsequent emergencies. This unconscious foresight can be bettered by the intelligence of man in the cultivation of the reason. In that task the process becomes of more importance than the product, for it is the reasons and the descriptions that explain the success of what is learned and the sources of error and failure that are of use in later emergencies rather than the specific adjustments at which learning immediately aims. Lastly, all training of the reason should begin in the wise accumulation of resources and follow this by the cultivation of the logical attitudes.

Section 30. *The accumulation of mental materials*

Education begins with developing resources

If we analyze the materials of reasoning into plans and standards, it is evident that the acquisition of the former must precede the establishment of the latter. Early education is naturally an expansion. From the physical point of view, the child tries all its useful muscles and nearly all possible combinations of movement. It is the wriggling age, out of which emerges the possibility of varied and flexible control. From the mental point of view, the child passes from an age of primitive curiosity, that serves the simpler instincts and exploits through perception the world of commonest things, to an age of imagination and make-believe. This is the period of rich efflorescence of thought, out of which the child grows into a critical epoch. In this later period the acceptable idea is winnowed out from the mass of fancies. Truth is separated from falsehood. Memory proper is differentiated from imagination. But in the rage for criticism, for training, that is apt then to appear, the teacher must beware lest the child cease to accumulate and to originate. There can be no healthy mental development without constant additions to the mental resources. A school that would culti-

Criticism comes later and should not impede expansion of power

vate reason must be a place of ceaseless activity, and it is more important at the start that the child should be active than that the activity should be approved. Herein lies the truth of President Hall's insistence on the free play of all instinctive activities,[1] and of Rousseau's ideal of a childhood of unrestricted sport.

Experience may be made typical. Value of the concept

However, certain kinds of resources are more profitable than others. It cannot be said that we are left with no method of providing for reason except by encouraging the child to acquire an indiscriminate mass of material. Without reference to specific uses, it is certain that some images, some ideas will be far more useful in the endeavor to grasp new situations than are others. Education of the reason is, as Professor McMurry suggests, continually in search of the type.[2] Typical experience is such as proves the clew to the interpretation and treatment of a great variety of specific emergencies. It takes, under the influence of the processes of generalization and abstraction, the form of the concept, which represents just that about experience which makes it typical; *i.e.* the universal quality. The concept sums up many particulars; that is, it contains that in them which is useful when applied to new situations.

The resources of the reason, then, consist ultimately of concepts, which, in consequence, are the goal of such instruction as aims to cultivate the reason.[3] The concept is an idea of relation. It grasps together many factors that are always to be found together in every case to which it applies. This is its intension. Wherever we have *fire*, we have many things going on. Heat is present, and if we come too near, we shall suffer pain. Substances are being destroyed, or rather transformed from solids, liquids, or gases, as the case may be, into certain gases, with perhaps a residuum of ashes. We might continue

[1] Compare § 21.

[2] Compare *The Method of the Recitation*, Ch. X.

[3] Compare *ibid.*, Ch. IV.

The concept as the basis of prediction, the unit in reasoning

the account of the intension of the concept, *fire*, almost indefinitely, but it is necessary only to note that its value in prediction, and so as a basis for dealing with new situations, depends upon this intension. When we can safely apply the concept, we can with assurance forecast the presence of the various factors of the intension, even though they are not yet present to observation. Thus the mind leaps ahead of the given data to interpretations. The associations or relationships which when seized and abstracted yield concepts are the active dynamic principles that lead thought on. Hence they are responsible for the interpretations of perception, for the images and ideas that course into the mind in thinking. When these relationships are generalized into concepts, one comes to apprehend the principles that bind his experience together and that enable ideation and conscious learning.

The abstraction of concepts as necessary to the criticism of thinking

The elevation of the associations of thought into consciousness in the form of ideas of relation, or concepts, enables their criticism. One is made aware of the principles that govern his thought, and is able to test their reliability. The concept forms a nucleus about which a larger and larger intension gathers, and from which elements mistakenly supposed to belong to its intension are being continually excluded. Moreover, the intension is gradually broken up into factors that are invariably present, and factors that are only occasionally in evidence. Especially important in this analysis of intension is the discovery of those elements that can be used as criteria in applying the concept to new cases. These are the defining characters. When they are present, one can apply the corresponding concept, and so add in safely any other elements of the intension that may prove of value in dealing with the case in hand.

The abstraction of the concept from the concrete cases to which it applies assists in its criticism and also in its application. As has been said, it represents just that in particular instances

which can be applied universally. Therefore its recognition, criticism, and definition make available in a universal form this potent agency. It is freed from the accidental associations that might confuse and prevent its application where it properly belongs, or lead to a false use. Hence the accumulation of resources for reasoning means primarily the abstraction and the criticism of concepts.

Concepts to be useful should be derived from the concrete

There can be no question that the process of generalization makes for ability to discover in new situations something that is familiar. On the other hand, the teacher must be careful in dealing out to the child concepts to avoid the common error of supposing that it is enough to impart a truth in a generalized form. Here again Professor McMurry has a valuable suggestion[1]; namely, that only concepts that have been derived from and illustrated in concrete material are properly endowed with meaning and usefulness to their possessor. The truth of this principle is not self-evident. Why should not the generalized form be enough? Since it is only this universal factor that can be applied, one would think that in so far as it retained the evidences of its origin from particular data it would be incumbered and confused by unessential factors, the absence of which in new cases would prevent its recognition therein.

Accidental associations helpful in recall

Now although facts possess value just in so far as they have been or are capable of generalization, the bare abstraction is perhaps quite as valueless as the mere particular. For while it is in the form that makes it readily applicable, this form alone does not render it easy to be remembered and recalled. The conditions that cause any element to be revived in memory are complex. It is rare, indeed, that a principle is recalled when no link of resemblance save that of this common abstract concept exists between the new situation and the earlier ones from which the principle was derived. A physician who has

[1] Compare *Method of the Recitation.*

observed in the sickroom the symptoms of a certain disease is more likely to recognize the disease in a new case than if he had only read about these symptoms. This is true not only because the actual observation impresses the symptoms upon the mind, but also because the circumstances of these actual cases resemble in many more points the new case than do the circumstances attendant upon reading a book or listening to a lecture. One would be likely to recall book knowledge in reading new books or in discussing the literature of the subject. When one actually faces the concrete situation where the knowledge is to be used, the ease with which he can call up his resources depends directly upon the amount of similarity between the total situation before him and the total situation in which his knowledge was obtained. Into this total enter elements that may seem to have the most accidental connection with the vital principle that relates the present with the past. A mere similarity in subjective mood may constitute a link that helps recall quite as effectively as does the logical principle the application of which is the function of the recollection.

"Total recall" and its prevalence

Professor James has called that type of recall in which the suggested experience is brought back because of its connection with all or nearly all of the present context of thought and feeling total recall.[1] If we were to represent this context by *a*, *b*, *c*, *d*, etc., among which are not only the dominant sensations, images, concepts, and feelings, but also receding and rising ones, then any experience that is called up not merely by the influence of *d*, but also by the help of *a*, *b*, *c*, etc., is a result of total recall. On the other hand, if *d* alone, or in conjunction with a small portion of the context, calls up an experience disconnected with the rest, we have partial recall. Total recall means the unrestricted domination of the mechanical laws of habit, which, as we have seen, constitute the original dynamic

[1] *Psychology* (Briefer Course), Ch. XVI.

of mental association. Partial recall means the introduction of selection, of preferences. It means the disintegration of the associations of mere habit in order that they may be made to conform to those of logic.[1]

"Partial recall" especially helpful to reason

Both types of recall are instrumental in affording resources to reason. They supplement each other, and yet are distinct in operation. Total recall, the recall of habit, furnishes the basis by which materials are originally brought together in the mind. The grip of such memory, with its mechanical links of customary connection, causes a mass of material to accumulate in the general field of attention. Thereafter processes of selection, resolution, and reorganization set in. The effect of these is to single out certain factors, making them more powerful in suggesting force than the others, because they and their associated thoughts represent more reliable, more consistent, more important factors in experience. In this process of evaluation the analytical power of mind comes to the front, and it is upon analysis that originality largely depends. However, the selective activities that are operative in partial recall cannot become active until the mechanism of habitual memory has provided material. Moreover, after analysis, selection, and reorganization have done their work, their results must be intrusted again to the binding force of a new set of habits in order that they may control the current of thought in the future processes of recall.

Partial recall is recall through selected, generalized, evaluated associations. Total recall means the continued influence of associations of habit that do not have the same universal character, yet add their weight to the forces that determine the current of the thought. Herein lies the main reason why generalizations are more apt to be useful when they come to us embedded in a concrete experience many of the elements of

[1] Compare § 27.

which are likely to recur in the cases where the generalizations are to be used. Education, therefore, while it emphasizes the superior importance of the universal, which is abstract, cannot neglect the particular with which it is connected so habitually that the child and even the man find it difficult to recall the one without the other.

Four applications of the principle that concepts should be derived from the concrete: (1) Inductive teaching

Four general principles of method may be said to find their logical ground in this principle that generalizations are more likely to be recalled when derived from and associated with a mass of concrete associations similar to the situations in which they are likely to be used. These are: (1) Concepts should be taught inductively; (2) the concepts must be well apperceived; (3) the schoolroom environment should correspond as closely as possible to that of life; and (4) concepts can best be reached through the study of types. The inductive method of teaching has been emphasized by educational reformers since the time of Comenius. It received a formulation by the Herbartians, as the formal steps in teaching. These are given by Professor Rein as preparation, presentation, comparison, generalization, and application. Preparation means gathering together the knowledge that the children already possess on a given subject. Presentation means putting them in possession of new concrete facts relating to this subject. The facts will naturally be chosen so as to stir up curiosity in regard to their explanation, and will lead, when they are explained, to principles of far-reaching importance. The comparison consists of the presentation of other concrete cases illustrating the same principles, so that these common concepts may be forced more clearly upon the attention. Then, having thus carefully prepared the ground, the generalizations are made, and the concepts stated in abstract form. Finally, these concepts are applied to explain new cases, and thus are verified, drilled in the memory, and familiarized in a still wider variety of contexts.

The formal steps

The formal steps were designed not only that the concepts that are the goal of education may be derived from the concrete instances, but also that whatever is learned may be thoroughly interrelated with the rest of the contents of the mind. This, of course, means apperception. According to the Herbartians, if the material of instruction is really to be absorbed so that it comes to interest and to affect the will and, in consequence, to establish character, it must be apperceived or thoroughly assimilated. Apperception means in the step of preparation the bringing up of the old in order to connect it with the new. In comparison it means organizing experience into systems. In generalization these systems are bound faster by the consciousness of the principle that connects them. In application a still wider field of experience is brought within the net of apperception. In all this the advantage lies in insuring recall. So many associations are established that a given item of thought can scarce escape the summons to consciousness when it is needed. The associations of apperception include, of course, as their chief factor the fundamental concepts. But there remains a vast mass of mere superficial associations which contribute materially to one's power to utilize what he has learned, and these the instruction that aims at apperception does not neglect.

(2) Apperception as an aid to recall, furnishing both fundamental and superficial associations

Perhaps the completest statement of the principle which we are discussing is to be found in the rallying cry of so much of modern educational reform; namely, that the school should conform to life. The conditions of learning should, as Professor Dewey insists,[1] conform as closely as possible to the conditions of application. Apperception not only should connect the new with the old, but it should strive to connect the new with that which is yet to be. But what is yet to be is not altogether determinate in character. The emergencies of life

(3) Conformity of the school to life

[1] *The School and Society.*

are unexpected and varied. Hence the school, in endeavoring to anticipate them, not only abstractly but concretely as well, must typify life in the greatest variety of representative situations. There can be no doubt that the remodeling of the school so that it may surround the child with an environment like that in which he lives outside school, and like that which he will occupy when his school days are over, will greatly increase the power to recall and to use what this institution has taught.

(4) The use of the type. Typical superficial associations

But while it is important that principles should be deduced from the concrete, it is no less important that the instances that are used as a basis of induction or for illustration or application should be selected, typical. The type, as Professor McMurry points out, is the link between the concrete and the generalization. It is that concrete instance which presents, in what may be styled its more unessential details, similarity to the widest range of cases to which the principle in question applies. Instruction through typical cases preserves the advantage of an appeal to total recall, while at the same time leading inevitably to that vital principle which it is the function of all recall to bring into use.

The evaluation of experience. Selection of typical cases

The accumulation of mental materials involves, in addition to experience and to provision for its recall, a differentiation of the contents of the mind on the basis of usefulness. Ideas must be evaluated. Resources must include not only plans of action, but also standards to which these can be submitted in being judged. The initial step in this process of evaluation is the selection of typical experience. As the fund of experience grows, certain cases inevitably force themselves on the attention as typical. They can be used again and again as a basis for the interpretation of new situations. The process of selecting typical experience is, when allowed to go on in a merely natural way, slow, laborious, and replete with erroneous valuations. The primary service of the school in the education of the reason

lies in the selection of the concrete experience which will prove of most avail, so that the difficulties of learning this by trial and error will in a measure be smoothed out.

Training in generalization as a basis for a sense of relative values and power of criticism

On the other hand, the real appreciation of relative values can arise only from a sense of the bad consequences of following unreliable standards and the advantages of the opposite policy. One cannot realize the difference that exists between standards and experience that is not appraised, if he is never faced with any experience that is not standardized. The development of judgment is in proportion to the clearness with which one is able to make his way in the midst of the suggestions of error toward that which can be trusted. But it is not necessary to leave the child to flounder along without help till judgment comes. In fact, so far from impeding the development of the critical sense, the help of the school may constitute the most favorable condition for its rise. In affording typical experience and in cultivating the tendency toward generalization the school is fostering a practice which lies at the very foundation of all criticism. Only in the form of a concept can the relations upon which the conclusions of thought are based be criticised and standardized. In all learning experimentation precedes selection, hypothesis is the foundation of knowledge. Getting the child into the attitude of generalization is to do what Socrates tried to do for the Greeks, to establish a definite starting point from which criticism can proceed logically without the confusion that mere reference to the concrete is bound to involve.

The important thing to note, so far as method is concerned, is that while judgment must be a result of personal experience with truth and error, the process of differentiating the two is quickened to an extraordinary degree by the clear definition of concepts, and by such assistance as enables the various criteria of truth to be clearly distinguished and applied. Thus the

selected experience of the school, instead of checking criticism and the growth of a sense of relative values, hastens the advent of these attitudes by putting the child in a position to realize the overwhelming importance of the evaluating process. The advantage of judgment does not appear great so long as judgment is very poor. Increase its efficacy, and the child is overwhelmingly convinced of its need.

Steps in the development of the consciousness of standards

The first step in the differentiation of standards is the selection of typical experience which the child does not yet realize to be typical. The second step is the formation of concepts. When these are by the child applied, it is possible for him more readily to separate the true from the false and to make the proper corrections. This one may call the third step. It leaves the child with a mass of ideas that he knows to be reliable, which stand out in sharp relief against the untested or the disproved. But meanwhile a new set of ideas is being differentiated, defined, applied, and tested. These are the criteria of the process of judgment itself, the laws of consistent thinking, the empirical and the rational tests of truth, the principles of quantitative, spatial, temporal, and causal arrangement. The school leads the child to distinguish these, thereby putting him in a position to test their value as guides to practice.

The standardization of thought as a check to originality

The standardization of thought tends to the elimination, the forgetting of that which does not conform. It thus falls in with all habit-forming in involving a loss of resources, with, of course, a corresponding loss of originality, resourcefulness, except along dependent lines of progress. An individual, a race, or an age may fall into habits of thinking, and find it difficult or impossible to entertain other standards, or even to think outside the beaten path. Thus mental processes, like physiological ones, tend toward an adjustment that fits the environment, and when this environment changes, it is to the new generation, with its capacity for variation and experimentation

toward different standards of thought, that we must look for readjustment. It is possible that in its higher reaches thought has attained standards that will always apply. Doubtless, philosophy and science have established principles that with proper application constitute an universal adjustment. Throughout eternity they will prove safe guides to action. Even here, however, to lose the sense of alternatives, to think mechanically, is likely to cause one to apply the principle without adequate regard to special conditions, and so to fail of complete success in its use. No principle, however universal, can be satisfactorily applied without regard to the specific problem in hand. Thus habituation is ever a possible source of danger to the proper functioning of reason and, indeed, of all readjusting processes.

Summary

In résumé, we may say that the accumulation of materials for reasoning begins with the mere acquisition of experience. It is well that this experience be from the first fairly representative and that it be carried, as rapidly as is consistent with clearness, on to the stage of generalization. The concept represents the universal, which can alone be applied in new cases. It represents this universal in an abstract form which can be definitely apprehended and criticised. But mere abstractions not derived from and widely illustrated in the concrete are not likely to be recalled when they are needed. The multitude of factors entering into the context of new situations distract the mind, and lead it far from the principle which it seeks, unless they are similar to the contexts in which the principle was learned. Resourcefulness requires attention to this principle of total recall. From the point of view of method, it leads to the inductive method of teaching, regard for apperception, making the school environment similar to life, and the use of types.

As the experience that is necessary to provide resources for

reasoning is being acquired, the standards of judgment may also be given. The steps preparatory to the appreciation of these are familiarity with typical experiences and generalization. Then comes the step of application, in which the critical sense is roused, and truth is separated from falsehood. Lastly, with the help of the school, the principles of judgment, by which hypotheses may be tested and standardized, are themselves lifted into consciousness and criticised, with a corresponding increase both in availability and accuracy of use.

Section 31. *The cultivation of the rational attitudes*

Relation of the attitudes of originality and criticism

There remains the cultivation of the rational attitudes, the attitude of originality and that of criticism. The one involves the power to summon up one's resources in a comprehensive way, even though they do not at first sight commend themselves as especially appropriate; the other means caution and the constant sense of need that all decisions should be justified by fact and reason, in so far as this is possible. As distinguished from a well-stored mind, an original mind is one that has confidence in its possessions, and boldness and energy in utilizing them. It is a mind that is capable of getting away from the point long enough to see if there are not new and more effective ways of hitting it. Thus the secret of originality is to be found in wise digression, a digression that is kept from mere mind wandering by the constant recurrence of a critical attitude that compels the thinker to refer the current of his thought back to the problem from which it began. That the attitude of originality may be assumed, that of criticism must be temporarily in abeyance. That originality may be brought under control, the attitude of criticism must forthwith be resumed. Thus the two attitudes may work in harmony, and render their possessor both brilliant in suggestion and sane in decision.

The essence of the attitude lies in certain habits and associated feelings, which, when aroused, stimulate both the imagination and the judgment. They accomplish this result by directing the attention properly. The feeling accompanying the active attack of attention upon any field of experience is called interest. Interest is feeling, but that peculiar feeling which goes with the forward movement of thought. Attention and the associated interest are, in great measure, the outcome of certain motor adjustments that throw the mind into the attitude most favorable to the perception of certain objects, to the recall of experience, or to the analyses and comparisons of reason. These motor adjustments are quite evident where attention is turned toward perception through the senses. They are not quite so apparent, yet no less unmistakably present, when one concentrates upon a train of thought. One composes his mind to reflect. This means the activity of a number of habits that shut out distracting stimuli and encourage the activity of the brain.

The attitudes based on attention and interest, and on the motor adjustments back of these

The motor adjustments through which the attitudes are invoked are themselves the habitual responses to certain classes of situations. Where it is plainly a matter of vision, the eyes are accommodated, and the mind turns toward the business of seeing. Where the situation demands the recall of a definite past experience, all the adjustments favor the shutting out of distracting perceptions, the inhibiting of futile lines of thought, and the encouragement of such associations as seem likely to lead to the desired idea. When one reasons, the situation that provokes the attitude is the emergency, the problem. Such a situation may become associated with specific adjustments that favor adventurous thinking followed by sharp criticism.

Habitual character of these motor adjustments

The cultivation of the rational attitudes means, then, habituation in certain adjustments that tend to release the activities

Method of cultivating such habits. Value of the problem

of imagination and to protect them against distraction, while at the same time they provoke caution, a sense of the business in hand, which keeps thought from wandering too far afield without at the same time paralyzing its activities. The school knows no way of training in these adjustments except by constantly throwing the child into the situation that requires reasoning, and by helping him to realize the value of the attitudes that favor the getting of results. The reasoning situation is the new situation, the emergency, the problem. To cultivate power to reason the school is wont to cast its work in the form of problems to be solved. But to be effective the problems must be real, and this requires that, on the one hand, they should seem important enough to warrant the effort required for their solution, and, on the other, that the child should be able to meet them with the knowledge at his command.

Conditions under which a problem excites interest.

Immediate and mediate interest

If a problem is regarded as worth while, it at once becomes interesting. If it is a problem that admits of immediate solution by the resources of the child, the interest is called by Professor Dewey immediate. If, on the contrary, the instrumentalities by which a problem is to be solved are to be mastered only after long effort, the interest in that effort is mediate interest. Mediate interest is the interest in work; immediate interest finds its home in activities worth while for their own sake. In general, these are represented by play. The problems of play are usually simpler than those of work, and they do not require such long-continued effort. It follows that in work the importance of what is to be done must be felt to be great. The rule is that the task must be felt to be worth while in proportion to the intensity and the persistence of the effort it demands in doing things that are merely instrumental. In work the issue of motive becomes of prime importance. Mediate interest involves more powerful motives than does immediate interest.

Of course, all work does not take the form of a problem. It may not involve any new situation, any summoning of one's resources to cope with the unforeseen. But whether it involves a problem with its appeal to the self-activity of the individual, or simply requires mere mechanical drudgery, motive is of first importance. To insure a downright assumption of the reasoning attitude the emergency presented must interest, must seem worth while. Moreover, the teacher must note that the character of the emergency depends on the direction of the interest, or on the thing that is regarded as worth while. If the real problem is felt to be merely that of meeting the requirements of the teacher or of the book, the wits of the child may address themselves to quite a different set of devices than would pass in review in case this problem were interpreted according to the intention of its framer, as related to the larger necessities of life and to be taken at its face value. In such cases the child studies not to learn about something, but to recite in a satisfactory way. The exercises in arithmetic become endeavors to get the answer of the book, not to find out a fact that has relation to real life. Such problems may be called not genuine but counterfeit, for the situation with which they face the child is not the one that they are supposed to present.

Necessity of motive in work. Character of the problem dependent on the motive

The use of the problem as the form of educating the reason has been especially characteristic of education in modern times. It may be said to be the largest outcome of educational reform in the direction of method, and its advent means the conscious endeavor to give to the child not merely the fixed adjustments of recapitulatory education, but also the capacity to readjust that springs from reason and its culture. In general, the educational principle that has been put forward as representing the issue is that learning should stir up the self-activity of the child, that the child should learn from his

The use of the problem in modern education

own experience and efforts, not from those of the teacher; in other words, that the most effective teaching is self-teaching Stated in its most extreme form without amendment, this principle leaves no ground for the work of the teacher and the school. We are committed to the negative or "let alone" education of Rousseau, at any rate so far as the cultivation of rationality is concerned. With such a conception Rousseau himself is inconsistent, as is evidenced by his description of the ideal education of Emile. In the endeavor to give positive assistance in cultivating the rational attitudes, the school has proceeded along two lines. On the one hand, it has modified old-fashioned methods by which the teacher was wont to give instruction, and, on the other, it has changed the form of the study of the child.

Self-teaching not an adequate educational method. Two lines along which method has been improved

From the point of view of the methods of instruction, the attempt to cultivate the power to reason has led to the substitution for the method of lecture, or of direct imparting of information, that of discussion, or better, of development. Not that the lecture has been abandoned, but that it has come to be felt that any points which can be covered by the experience already gained by the pupil should be left to him to answer by making use of his resources. Development consists essentially in getting a problem before the class, and extracting the solution from them. It is the Socratic method, and although it is not necessarily founded on the Platonic theory that true knowledge is of ideas that are innate and need only the proper suggestions in order to be recalled to mind, it does assume that very commonly a pupil feels entirely ignorant upon a question when in reality he possesses abundant experience from which to draw an answer, if only he would use it. Such a method is therefore primarily an attempt to stimulate the pupil to use his resources. It aims directly at what we have called originality, or at that attitude which refuses to

(1) Improvement of instruction. From lecture to development

stand paralyzed when a new situation appears, but immediately looks within and sets going the machinery of imagination in the confident hope that some adequate solution will thereby be found.

Development lessons should cultivate both logical attitudes

The first effect of the method of development lies in provoking self-activity, spontaneity, originality. On the other hand, it may and should help to cultivate the critical attitude as well. This result is, however, secondary, and may not be gained. Herein lies the principal criticism that is urged against the employment of the method of development. It is that such exercises tend to become mere guess work. The sting of this objection lies not in the statement that the pupils *guess*, but rather in that it is implied that this is *all* they do. The development method should aim to cultivate a habit of guessing, if by this we mean advancing a tentative answer for critical review or experimental verification. But it is, indeed, an imperfect method if it does not aim to include in the labor of the pupil the task of deliberately subjecting his guess to his own judgment or to a test in giving which he himself plays an important part. Spontaneity and fertility of suggestiveness must be supplemented by caution and careful reflection. A class should not be led wholly to rely on the decisions of the teacher, but should itself subject its answers to a test of relative value. Development should terminate in discussion and criticism. Thus the mere guess, or utterly thoughtless and inept answer, will be ruled out, and those who indulge in such efforts subjected to repressive forces, such as loss of prestige, ridicule, etc. The critical attitude should not be cultivated so rigorously as to paralyze the confidence, but without proper attention to it the method of development becomes very loose and slipshod.

When we turn to methods of learning or study on the part of the child, we find that the older requirement of a set task

(2) Improvement of study. Kinds of problems: (*a*) Problems in mathematics

of memorizing has been largely replaced by exercises that present problems which appeal to the intelligence. The subject of arithmetic readily came to consist largely of problems to be solved rather than tables and rules to be committed to memory. The same transformation has gone on to a considerable degree in other departments of mathematics, with a great resulting gain in their effectiveness as agencies for the culture of rational attitudes. There is, however, a criticism to be made upon much of the problem work in mathematics. It is abstract and unreal, and in consequence formal. Couched in concrete terms, it yet fails to have real significance to the pupil. It does not represent a real situation, but only the pretense of this. Thus the resources that are evoked to help in the solution are the formal stock ideas that spring from the textbook rather than from life. Moreover, the criticism is formal, so formal that it almost seems as though the critical attitude were not assumed. The problem may be utterly ridiculous from the point of view of concrete experience, yet if it presents a mathematically logical appearance, its absurdity in other respects will be unnoted. If a class were asked how many elephants weighing one hundred and fifty pounds each would balance one man weighing two tons, a large proportion of them would proceed to solve it in all seriousness. So long as this is possible, one can say that the problem not only fails to connect the arithmetic with life in such a way that it will be recalled and used in later real emergencies, but also that it fails to cultivate in the broadest way the rational attitudes.

Real *versus* formal problems

In linguistic work the tasks of interpretation and translation may be said to present problems of study to the pupil, but composition possesses the largest possibilities, and has been utilized of recent years in connection not only with the study of language and literature, but also as a means of putting together the results of investigation or thought in practically

any field. Essay writing, in which an endeavor is made to deal with certain large problems through resources obtained from library study, from reflection, or from any other sort of research, is unquestionably one of the most fruitful means of throwing the child into the reasoning attitudes. However, in spite of its remarkable adaptability, the writing of essays may degenerate into the most mechanical sort of an exercise. Too frequently the topic for the essay is a purely formal one, not vitally connected with any living issue in the mind of the learner. Compositions are written, not to meet some end for which written language is primarily intended, but merely to satisfy a schoolroom requirement. Words are strung together, but genuine originality and criticism are both lacking, because the situation lacks such connection with life beyond the school as to make it a real problem. When the compositions are intended for no eyes except those of the teacher, they are especially apt to become formal. In general, essays should be concerned with the genuine problem of putting before an audience certain results of individual investigation in which all are interested.

(*b*) Problems of translation and interpretation. Essay writing. Danger of formalism

Laboratory work in science presents a third important method of utilizing the problem in the tasks of the pupil. It finds its greatest value not so much because it emphasizes the ideas that are learned, as that it helps the reason, first by presenting the principles in the concrete associations in connection with which they are apt to be needed, thus furthering recall, and second, by cultivating the rational attitudes. This last advantage does not become great, however, so long as the pupil merely follows directions. It is, doubtless, true that our laboratories are to-day very largely places of demonstration rather than of research. Where this is the case, whatever may be said about the value of the knowledge gained, the rational attitudes receive no especial encouragement.

(*c*) Laboratory work. Its values

(*d*) Constructive work. Relative value of this and language work

Lastly, we may note constructive work as offering a fine opportunity for the introduction of the problem. So large a part of the work of mankind consists in manual constructions that the reformers of to-day have sometimes thought that this work should be made central in the school rather than the linguistic work which constitutes its traditional core of instruction. Working with the hands has been contrasted with speech and writing, much to the discredit of the latter. However, there can be no doubt that the leading interest of mankind will continue to be that of coöperating with society. For this end the humanities constitute the special preparation, and hence must far outweigh in importance constructive work. It is to be noted that constructive work may consist merely in following directions, and hence offer no problem to the reason. On the other hand, it lends itself admirably to individual tasks in the school, and so to problems in which each child is cast upon his own resources.

Dominance of the teacher in development work

When we compare the common difficulties that beset the teacher in the use of the method of development with those that he encounters in getting children to do independent work, we find an interesting contrast. To avoid the omnipresent danger of uncritical guesswork the teacher is apt to develop a point by asking very definite and detailed questions, thus keeping the progress of the thought of the class firmly in his own grasp. Thereby time is saved, and results are gained in the way of covering certain ground that has to be mastered. However, the dominance of the teacher in such exercises means a corresponding loss of rational attitude on the part of the pupil. The questions are too detailed to permit free play either to resourcefulness or to judgment. The child hangs on the suggestions of the teacher without facing any independent problem, and, instead of making up his mind on the basis of his own knowledge, waits for the

dictum that will soon come from the same authoritative source.

Difficulty in selecting problems for study

On the other hand, in the matter of study, if assignments really aim to set the pupil to reasoning, and not merely to prescribe a certain content to be mechanically mastered, they are apt to present problems that to the child seem extremely large in scope and indefinite in character. The result is that study becomes ill directed, uncritical, and results either in mere random effort or in mechanical compliance with whatever in the assignment admits of such an attitude. A problem is much more difficult to comprehend clearly than the ordinary task for memorizing, and it is much easier to know when the latter task is completed than to judge accurately regarding a solution of the former. Of course, when the results are given back to the teacher, his criticisms afford to the pupil a chance to see where his efforts were misdirected or inadequate, and gradually he may gain power to apprehend what is required in the problems assigned him. Yet it is safe to say that a very large part of a child's effort at study is hopeless floundering.[1] This the teacher feels, and as a result relies more and more on development lessons as the sole means of cultivating the reason, assigning for study merely mechanical lessons. In other words, the child's power to think is offered an opportunity only in the presence of the teacher and in response to detailed problems that afford little scope for the reasoning attitudes.

Need of correlating development and study lessons

The development lesson, therefore, is apt to put the child in close dependence upon the leadership of the teacher; while study assignments are likely to offer problems too indefinite for the child to grasp and treat adequately. What is needed is larger problems in development and more definite ones in

[1] Compare Earhart, *Teaching Children to Study;* McMurry, *How to Study,* Ch. I.

study. All this requires that the art of selecting and formulating problems should be the chief concern in the cultivation of the rational attitudes. Doubtless, the problem of the development lessons should lead into that of the study lesson, or at least help the child to realize the character of the latter and the sort of effort that it demands. The genuine problem, that is, the problem that corresponds to life, should predominate over the merely formal problems of the school. Finally, and more important than all, the child should be specifically trained in the art of study.

Class instruction and the decline of study

The growth of graded schools and of class instruction, together with the professional training of teachers along the lines of method of presentation, have made instruction revolve about the efforts of the teacher rather than those of the child. Our methods are not as wooden as of yore, yet there is grave reason to suspect that they have given the child too little opportunity and need for sustained independent thinking. Recent emphasis on the art of study by those who have been leaders in perfecting the teacher's art of presenting material [1] indicate very plainly that the interest in school method is beginning to turn from methods of teaching to methods of learning, from the art of the teacher to that of the child. For this result the newer psychology, with its study of methods of learning and its emphasis on motive and function, is partly responsible. In a larger sense, however, it is the inevitable forward tendency, the grappling with the next sequent problem in regard to the cultivation of the reason.

Training in study as a means of segregating the individual

The new interest in the art of study should be coupled with recent endeavors to segregate the individual from the class, and to deal with him apart from the mechanisms by which teacher and school must of necessity handle larger groups. Whatever device of school management proves most effective

[1] Especially Professor F. M. McMurry.

in enabling the child to be treated as an individual instead of as a mere fragment of a class, it is plain that the inculcation of the art of study must prove its most important auxiliary. For this means that much of the time that to-day is spent on the presentation of material to classes can by children trained in independent study be quite as profitably given to individual work, over which the teacher assumes only general supervision. Thus the school will become less a place of teaching classes, and more one of directing individuals to do independent work. Armed with a larger power of seeing the significance of things, the pupil may make the problems of mathematics, of language and composition, of the laboratory, and of constructive work bear upon the solution of the larger problems of life. Thus the assignment will come to make an intenser appeal to the reason and to the independent activity of the pupil.

Summary

The cultivation of the rational attitudes sums itself up, then, in training in certain habits or adjustments that with their associated feelings project the attention toward the mental resources, and suffuse the consequent thinking with a sense of its purpose and the importance of a critical adherence to it. The feelings that accompany attention are ordinarily called interest, which may be classed as immediate in case the problem that attention faces admits of an immediate solution, or as mediate when it involves work, or the use of persistent effort to master instrumentalities not in themselves worth while or interesting. Mediate interest demands more intense motivation than does immediate interest. To cultivate the rational attitudes the school must present problems to the child. These will be genuine, interesting, and so lead to reasoning in proportion as they seem worth while, or are connected with concrete living issues. If we divide the work of the school into the instruction of the teacher and the study of the child, the problem has been applied in the former by the use

of the method of development and discussion, and in the latter especially by incorporation in such activities as mathematical problems, composition of various kinds, laboratory and constructive work. To save guessing and mind wandering and to economize time, teachers have made development consist in detailed problems that do little to provoke the rational attitudes. Thus instruction has tended to center about the teacher, whose grip on the progress of thought in the classroom has done much to organize and clarify thought, but little for the cultivation of the rational attitudes. On the other hand, the assignment of work for independent study has, from want of careful attention, wavered between the indefinite problem and the prescription of certain activities to be performed mechanically. The indefinite problem, because it cannot be clearly grasped by the pupil and become a source of interest to him, gets no standard results satisfactory to the teacher, and, in consequence, it tends to be replaced by definite prescriptions that do not arouse rational attitudes. The desiderata are more careful attention to the nature of the problems used in instruction and the formulation and teaching of the art of study. The problems of the development lesson need to be made larger and connected with those of study. The problems of study need to be made definite, and so associated with real life as to seem worth while. Finally, the teaching of the art of study may be expected to assist in breaking up the domination of class teaching, by enabling the child to do more effective independent work, thus relieving the teacher on the side of presenting material, and enabling more attention to the supervision of the work of the individual. These changes will all conspire to change the center of school activity from the teacher to the child, and to cultivate the rational attitudes without impairing the work of storing the mind with resources.

CHAPTER X

THE QUESTION OF FORMAL DISCIPLINE

SECTION 32. *The history of the conception of formal discipline*

Formal discipline as the effect of the *form* of study

THE idea of formal discipline, or mental training through the form of study, is intimately associated with the endeavor to cultivate the reason. The connection of the two may easily be seen when formal discipline is defined. In general, it means the supposed effect of study upon the mind entirely apart from the content of what is learned. This effect is conceived to be so great and so important that many teachers say that it does not matter so much *what we study*, since the vital thing is *how we study*. The supposed significance of disciplinary effects springs from the fact that they are thought to be general in character rather than merely specific. For example, the study of Latin is held to give more than the power of feeling at home in its vocabulary and constructions, and so of being able to learn new Latin more readily. This further gain is found in a culture of one's powers of observation, memory, reasoning, criticism, one's sense of the values and uses of words. So, too, manual training is disciplinary, not merely in that it teaches how to plane and saw and how to fit joints accurately, but also in that through it, as is thought, the hand acquires a general dexterity, the eye a keenness, and the mind a clearness and a sense of the value of accuracy that are useful not only in carpentering, but also in watchmaking or in playing tennis or, indeed, in any business or profession.

Now when we mean by formal training not only the ac-

quisition of specific habits useful in connection with certain lines of thought or action, but also a general increase in power, it is evident that we have in mind a culture the especial value of which lies in that it enables the mastery of the new, the unexpected. The significance of general mental discipline lies in that it trains a faculty supposed to be independent of subject matter, and hence applicable to all the unpredictable emergencies of life. In brief, formal discipline is held to cultivate the power of conscious learning, of thinking, or of reasoning. Indeed, it may be said that in the past this sort of training has constituted the leading method by which the school has striven to increase general mental power.

Relation of formal discipline to the culture of the reason

If we refer to the analysis of the education of the reason contained in the last chapter, it is evident that formal discipline does not concern all the factors involved. By virtue of being formal, it disclaims any attempt to enhance the resources of thinking or to build up standards of judgment. Only in the cultivation of the attitude can it find a function. These attitudes are, as we have seen, based on definite mental and motor adjustments that the individual may be trained to make. However, the disciplinarians have not regarded the gain from their sort of education to be limited to the power to take these attitudes. They have assumed that discipline affects not only the power to call up one's resources and to be critical, not only the mastery of certain methods that make possible a most efficient use of one's mental power and experience, but also mental power itself. They have been prone to think that they were cultivating mental faculties, the functioning of which is independent of specific attitudes or habits.

Formal discipline thought to be more than the culture of the logical attitudes

The notion of formal discipline has, therefore, associated itself quite consistently with the so-called "faculty theory." This theory has already been considered in connection with the subject of Recapitulation, and need not here be described.

Connection of the idea of formal discipline with the "faculty theory"

Suffice it to say that, when observation, memory, reasoning, judgment, and will are supposed to be perfectly general faculties that can busy themselves equally well with any sort of content, the inference is inevitable that the increase in one of these faculties by training in any specific field will show itself without loss when the faculty is directed toward a different material. The faculty theory bids us search for the energy of the mind not in its experience, the living force of its ideas, but in the manipulating power of certain abstract agencies, that express themselves in clutching and transforming the material that experience presents to the mind. On this assumption, it is perfectly logical for the educator to assume that it is far more important to strive to develop the efficiency of these powers than to store the mind with material. If education can improve general abilities, it is evident that this is what it should, in the main, aim to do. The merely informed mind is bound to the special province of its information. Within these limits it shows power. But the disciplined mind is conceived to possess general superiority. One can get information on any topic when needed, but he cannot thus on occasion get the power that comes from training. Information gives the mind material that it may, provided it possesses the natural talent, use in certain cases. Discipline is thought to improve that natural talent itself.

Now while the faculty theory does not of necessity involve one in the belief that the faculties can be given general discipline, the two ideas go together, and in history they have almost if not quite invariably been held in conjunction. Whatever supports the faculty theory has been regarded as an argument for general discipline, and, *vice versa*, the apparent existence of general discipline has been taken to substantiate the faculty theory.

Two main classes of facts lead to the conception of mental

Arguments for the "faculty theory"

faculties: first, the mental differences between men and men, and men and brutes; second, the method by which sensations are obtained. In regard to the first class, we note that individuals and species differ from each other in the quality of their minds. The effect of experience depends in every case upon the mental ability of the one who experiences. Here, at any rate, we have a perfectly general power, not a result of culture, but rather antecedent to it and a condition of its possibility. The facts of sensation tend to suggest that this general ability may be specialized into faculties. We see not merely because there are objects to be seen, but because we have the apparatus for vision. Having eyes and a brain, we possess the possibility of seeing many things. It is natural to suppose that, just as the power of sensation rests back on the general effectiveness of the apparatus of sense, so the power of thinking depends upon the general effectiveness of memory, reasoning, judgment, etc.; that is, upon the faculties.

Question as to whether general power can be improved by culture

It is further evident that whatever improves the general ability creates a new type of individual, just as whatever improves the eye adds to the general effectiveness of vision, etc. However, it may not be possible by education to improve native talent or imperfect eyes. Indeed, it is likely that culture is limited to the mere process of selecting among the potentialities of growth those that should be encouraged in order to insure specific adaptation to prevailing conditions. In that event, one may hold to the faculty theory, at least in one form, and yet not regard disciplinary effects as general. Education may simply consist in direction, such as permits native power to develop along the most effective lines.

On the other hand, if we compare the intelligence of educated and uneducated men when placed in similar situations, the view that on the average the former have greater general ability seems almost unavoidable. Historically the educated

classes show the greatest vigor of mind. College graduates average better success in life than those who have not enjoyed their educational advantages. It seems fairly evident that the educated man is likely to deal better with a situation concerning which he has no special experience than is an uneducated one. It is, however, by no means certain, as is commonly assumed, that the general superiority of the educated classes is due to their education. It is quite possible to suppose that their ability, so far from being a result of their education, is the reason for it. Only those of intellectual power can take in an elaborate culture. It may be that college graduates tend to succeed, not because their college education betters their natural talent, but solely because of their original endowment, which, among other things, enabled them to get a college education, — something that the traditions of society regard as highly desirable. Undoubtedly, well-educated men constitute a class selected for native ability. Hence we might expect them to succeed better than the great mass, a very large portion of whom are uneducated because of incapacity.

The superior ability of educated men not shown to be due to training

However questionable the faculty theory may be, and however doubtful the common arguments for a general discipline of the mental powers, it is evident that these notions have prevailed from the beginning of attempts at psychological analysis. They, therefore, lie ready to hand for emergencies when they are needed as a defense for courses of study the specific value of which is not apparent. In general, we may distinguish three causes for the existence of such curricula. In the first place, the school is apt to be conservative, to cherish its own. Schoolmasters are wedded to their subjects. In the second place, the curriculum that meets a real demand in one age may grow obsolete in the next, and the schoolmaster may be forced on the defensive to justify his practices. Finally, as society advances, since progress becomes more swift and

Formal discipline as a defense of subjects of doubtful utility

social relations more flexible, it becomes increasingly difficult to predict for the boy his career as a man, and so the school finds it constantly harder to select a suitable curriculum. It is easy to train for the definite; difficult, if not impossible, to train for that the exact nature of which we cannot foresee.

The disciplinary argument may be used to defend an antiquated program, and to excuse the school from the task of finding a curriculum that in its content can be shown to be best adapted to composite and rapidly changing life. If the mere exercise of the faculties improves them, then it does not matter whether the course of study be out of date; the important thing is whether it is hard, whether it exercises the mind. Moreover, it is not worth while to bother about trying to forecast the uncertain careers of the pupils, since, whatever they do, they will need above all the mental ability which discipline may be expected to give them. The belief in formal discipline saves the school much anxiety and laborious effort.

Discipline as the argument for the classical curriculum

One of the most striking instances of the use of the disciplinary argument is as a justification of the classical secondary program which we owe to the Renaissance. As Latin drifted more and more out of usage, and new literatures expanded, as the ancient culture ever lost ground before the achievements of the newer life, or, becoming assimilated therewith, ceased to require so much special training of those who would utilize its spirit, but wished if possible to avoid the labor of mastering its form, the schoolmen found in the notion of the training of the faculties a bulwark of defense against a practical world. Thus their beloved specialties, which had absorbed most of their spiritual life, and which they were skilled to teach, gained a recommendation for men who saw in their content no utility.

In the last century the disciplinary argument grew to be the leading support of existing educational practices. Youmans, advocating in 1867 the reorganization of the program of study

in secondary and collegiate education in order that more science might be introduced, says :[1] —

"The adherents of the traditional system . . . maintain that knowledge is to be acquired not on account of its capability of useful application, but for its own intrinsic interest, that the purpose of a liberal education is not to prepare for a vocation or profession, but to train the intellectual faculties. They, therefore, hold that *Mental Discipline* is the true object of a higher culture, and that for its attainment the study of the ancient classics and mathematics is superior to all other means."

Again the Emperor of Germany said in 1892, regarding the advocates of the existing program in the classical gymnasia: —

"If any one enters into a discussion with these gentlemen on this point and attempts to show him that a young man ought to be prepared, to some extent at least, for life and its manifest problems, they will tell him that such is not the function of the school, its principal aim being the discipline or gymnastic of the mind, and that if this gymnastic were properly conducted, the young man would be capable of doing all that is necessary in life."

Historic attacks on the faculty theory

In the progress of time psychology, which in its earliest state assumed the faculty theory and countenanced the idea of formal discipline, broke away from both. Even Locke, who by Professor Monroe[2] is taken as the typical disciplinarian, questions the possibility of a general training of the memory.[3] The first outspoken rebellion against the faculty theory was that of Herbart. However, the way for Herbartianism was prepared by Kant. This philosopher, although in the distinction between his *Critiques of Understanding, Judgment,* and *Practical Reason,* or *Will,* he gave a new formulation of the faculty

[1] *Culture demanded by Modern Life: Mental Discipline in Education.*
[2] *Textbook in the History of Education.*
[3] *Thoughts on Education.*

theory, nevertheless, paved the way for a new theory of mind in his conception of the *à priori* elements in experience. According to the notion of the faculties, the sorts of consciousness are results of the manipulation by these inner powers of the material given by sense. To observe means to discriminate the data of sense by separating them from each other. To remember is to retain them. Comparison, abstraction, association, reasoning, judgment, add nothing to sensation. They merely arrange the materials of sense in a different manner; manufacture it, as it were, into new forms. But, according to Kant, experiencing means that the mind is contributing to the objects of consciousness something that is definitely recognizable therein. Perception is not merely sensation plus the reproduction of such experience as gives it meaning. It is the organization of the manifold of sensation by forms that enter into its constitution, transforming into experience what would otherwise not be consciousness at all. Mental activity is synthetic, not merely analytic. It adds to sensation space, time, causal relationship, in short, all the categories by which relationship may be expressed. They are the warp of experience, and the material coming from the senses is the woof. But as both warp and woof are thread, so one might readily say of the form of experience that it too is content, having a somewhat different nature and function from the stuff that it organizes and transforms into experience. The Kantian *à priori* form is not an abstraction that intelligence analyzes out of its objects. Rather it is a positive factor that a synthetic mind adds to its content, as the breath of life that makes it real experience.

(1) Kant's *à priori* forms as a substitute for faculties

Now while Herbart rejects the Kantian notion of the *à priori* forms, he clings to the view that mental activity is not the manipulation of a mental content, but is rather the fusion of content elements themselves. He holds that what lifts the

as yet unapprehended idea into the region of consciousness is the force of other kindred ideas that are already in this realm. To attend one must apperceive, and apperception is not, as with Kant, the organization of a content by an *à priori* form, but the attention to new ideas because they are related to old ones. Such attention is coincident with interest and comprehension. Ideas that have no meaning cannot rouse interest or attention. It is the fusion of old meanings with new objects that elevates them into consciousness. This is apperception, — a meeting, not of a content with a form which is essentially different from it, though capable of fusing with it, but rather of one content with other contents, having the same general nature and origin, but differing in possessing the advantage of being before attention.

(2) Herbart's apperception as the thinking of ideas by ideas

Thus according to Herbart we have, not the mind and its ideas, but rather just the ideas. The ideas do the thinking. The interplay of thoughts upon each other is the activity of consciousness. Hence, there are no faculties left. Herbart saves the terminology that refers to them, but with the caution that it is intended to indicate various phases of the interaction of ideas upon each other, and not in any sense separate powers of a mind to the energies of which this interaction is supposed to be due. With the faculty theory departs the notion of formal discipline, which has no place in the pedagogy of Herbart, or in that of his disciples. For them the fundamental educational conception is not discipline but apperception. The important thing for a teacher to know is, not how well drilled a child is, how well his faculties may be expected to work, but what experience he has assimilated. This exploited, it can easily be seen what material the child will be interested in, understand, and assimilate. Mental power is a function of the organized experience of the individual. Organization is inherent in the material itself, and not a result of its manipu-

Consequent rejection of formal discipline

lation by a mind, or of the imposition upon it of *à priori* forms. Since form is dependent upon content, all studies are really content studies, and it is idle to talk of the disciplinary value that their form possesses independently of their subject matter.

Practical effect of Herbartianism in regard to formal discipline

But the influence of Herbartianism was not primarily thrown into a resolute attempt to reform the curriculum, — except as it is seen in the culture-epoch theory. In the main, the Herbartians strove to improve and rationalize method, and only incidentally to enrich the course of study. Herbart himself valued highly both classics and mathematics; and although this estimate was based on a regard for their content, it is only natural that the implications of his view in reference to that favorite defense of such work, their disciplinary value, should have been neglected because of his advocacy of the subjects themselves. Moreover, the influence of Herbartianism has been rather restricted. In consequence, the disciplinary theory grew and flourished, until new educational conditions arose to minimize its importance, and a new psychology, of which Herbart may, perhaps, be regarded as the original expositor, came to attack again the faculty theory upon which the conception of formal discipline is founded, and to question through its experiments the facts assumed by the theory itself.

Formal discipline as a defense of any program

The educational condition that forced the doctrine of formal discipline into a subordinate position was the actual admission of new subjects into the curriculum, at first mainly for their content and their utility. In order to maintain and, if possible, to increase the ground thus gained, the advocates of the newer studies insisted that these were just as valuable for discipline as the old ones. Thus science availed itself of the principal weapon of the classics, and urged its superiority for the reasons that it furnishes just as good discipline as they, if not better, and that it is far more valuable for the utility of its content. Such is the view of Spencer and of Huxley and of the defenders

of science generally, as well as of those large-minded educators like Barnard, who, while appreciating the value of the classical culture, felt the need of a broader curriculum in order to keep pace with the progress of science and the arts of life. Moreover, just as the notion of discipline was utilized to defend the new as well as the old subjects, so it came to be utilized in the service of the elective system as well as in that of prescription. The defenders of the old required course urged that any deviation from its standard materials would leave a gap in the mental training of the young. Some powers would in that case not be properly developed. On the other hand, those who favored, as does President Eliot, the scheme of election were insistent on the view that one subject will furnish as good discipline as another, provided it is properly studied.

(3) Application of experiment to the question

Thus compelled to fight on both sides of every vital question, the notion of formal discipline fell into decline. As a weapon with which to win a decided victory, it ceased to have any value, and it retained the sole function of clouding the atmosphere, that a losing side might escape in the confusion thus brought about, or perhaps, resorting to other devices than reason, win by strategem what could not be gained in open fight. There remained for the psychologist the task of dislodging the conception from this doubtful position, and of either justifying and resuscitating it, or of forcing it into the limbo of rejected hypotheses. On this last stage of the history of the theory we have now entered, and, although most psychologists would refuse to admit that the question is in any sense settled, yet much has been done that we may now proceed briefly to review.

Summary

To recapitulate: the desire to preserve in the school subjects the content of which is not closely related to the current life, and the difficulty of finding just what subjects are best fitted to prepare for life in an individualistic and progressive civili-

zation, have combined to cause the schoolmaster to resort to the idea of discipline through the form of study. Such discipline is supposed to arise from any subject when it is well studied, and to afford mental power that can be utilized in any kind of an emergency. Since the disciplinary theory is a natural outcome of the faculty theory, the abandonment of that view by Herbart in favor of his "content" theory of mind led to the rejection of the notion of the discipline of the faculties. Modern psychology has, in general, followed the Herbartian view, but, nevertheless, the disciplinary argument has been retained. It has lost ground, because it has been found to be equally useful to defend any program of study where the mind is set to work. Finally, it has been attacked by the experimentalists.

Section 33. *Criticism of formal discipline by recent psychology*

Native ability may be general or special

The disappearance of the faculty theory cut the theoretical foundation from beneath the belief in formal discipline. But the notion was supported by much direct evidence. It remained for recent psychology to call this evidence in question, and to endeavor to ascertain the exact facts by careful experimentation. We may first consider the preliminary phase of this discussion. On the one hand, men have noticed that certain individuals whose powers of observation were good in certain fields seemed similarly gifted when they came to attend to the facts in other fields. The all-round ability in observation of an Aristotle or of a Darwin is a characteristic that seemed to be repeated on a lesser scale in many men whom we meet. On the other hand, it is no less common to find men who possess great powers of observation in certain fields, and seem in others to be singularly unable to note the facts before them. The specialist in botany who sees plants, but is oblivious to the

facts of human nature; the tailor who notes the character of our garments, but fails to see anything else about us; the business man who travels abroad and sees nothing of art or history or quaint custom, but attends only to the quality of the transportation, the hotel service, or the business methods, — all illustrate this notorious characteristic of human nature. So, too, there are men like Macaulay with excellent memories for all sorts of facts, while others seem to remember well only those in one or at most a few special fields. I have in mind the case of a boy who was subnormal in power of retention in regard to his school studies. However, he had a very fair, indeed, to many observers, apparently a very good memory for baseball records. Even in reasoning, where one might expect the specialization of ability to be least in evidence, we can place beside those Cæsarian types whose versatility is so extraordinary the inventor who is fleeced by the scheming promoter, and the typical lack of critical sense of the business man when he faces a problem of pure science. So, too, in regard to will, the fairly consistent Rooseveltian type may be opposed by that of those men whose decision and resolution in some emergencies are replaced by vacillation in others. Finally, one may be punctual at business and irregular at meals, conscientious in returning calls and careless in answering letters, and so on indefinitely. Thus it would seem that powers of observation, memory, judgment, and will may be either general or special, and that habits may apply to many situations or only to one.

Ordinary observation not evidential of general disciplinary effects

Such ambiguities leave it possible to suppose that native ability may be general or special, and that the effects of training may similarly be both. Considering all these facts of observation, together with that of the general intellectual superiority of the educated classes discussed in the last section, it seems that the hypothesis that native ability tends to be general, while the effects of training are specific, is quite as plausible

as any other. So far as ordinary uncritical observation is concerned, therefore, there seems no clear evidence for general disciplinary effects. It remains for scientifically guarded observation and experiment to determine for or against its existence.

Classes of experiments

The experimentation on this matter may be reviewed under the following headings: (1) the effect of training certain muscles and sensory surfaces upon bilaterally symmetrical ones; (2) the effect of special training on the general accuracy and rapidity (*a*) of discriminations or estimates made by the senses, (*b*) of motor adjustments, or (*c*) of memorizing; (3) the effect of special habits on general behavior.

Experiments of Volkmann and others

(1) *Effect of training certain muscles and sensory surfaces upon bilaterally symmetrical ones.* Experiments by Volkmann [1] show that when skin of the left arm is trained to discriminate touches that are so near that they were at first confused, the skin of neighboring areas and also of the right arm makes similar, although not proportionate, gain. Other experimenters discovered that as training of one arm improved its grip, the grip of the other became stronger; [2] as the right toe was trained to tap more quickly, the left toe and both the hands showed some quickening in speed in this exercise; as the right arm gained through practice the power to lift a certain weight more times or to strike a target more accurately with a foil [3] or to hit a dot,[4] the left showed considerable if not equal improvement.

Transference of practice effects to symmetrical parts due to identity of function and control

Professor Thorndike [5] regards these cases as not properly instances of the spread of special training, because the influence of bilaterally symmetrical halves of the body upon each other constitutes a "very peculiar case." It is to be noted

[1] *Bericht der Kgl. Sach. Ges. d. Wiss., Math.-phys. Cl.*, 1858, X, 38.
[2] *Yale Studies*, Vol. II.
[3] *Ibid.*, Vols. VI and VIII.
[4] *Psych. Rev.*, Mon. Supplement, No. 13, p. 105.
[5] *Educational Psychology*, pp. 87–88.

that we do not have different things done by different organs, or even by the same organ, but rather practically the same thing done by organs which, because they are symmetrical, are practically identical in function and control. Hence, we can scarcely speak of the development of any general power. However, in so far as there is any evidence of generalization, it is plain that it depends upon the presence of "identical elements" to be discriminated by different parts of the same sense organ, or of identical methods of control over different but very similar associated muscles.

(2–*a*) *Effect of special training on the general rapidity and accuracy of discriminations and estimates made by the senses.* Thorndike and Woodworth [1] found that improvement in discriminating words containing the letters *e* and *s* brought with it improvement of 39 per cent as much in the speed of discriminating words containing *i* and *t* or *s* and *p*, etc., or misspelled words, or the letter *A* in a list of letters. There was also a gain in accuracy, but only 25 per cent of that in the practice work. Training in perceiving English verbs, which reduced the time of discrimination and the number of omissions, made it possible to discriminate other parts of speech 3 per cent more quickly than before, but there was a large increase in the number omitted, showing positive interference. Forty-four per cent of the improvement resulting from practice in estimating the areas of rectangles was shown in the power to estimate the areas of rectangles of the same general size, but of a different shape, and 30 per cent of this original practice effect remained when the size was increased but the shape retained. Curiously enough, when there was both increase in size and change in shape, the transfer of improvement was most marked, being 52 per cent of the original gain. Improvement in the power to estimate weights resulted in 39 per cent as much

Experiments of Thorndike and Woodworth

[1] *Psych. Rev.*, Vol. VIII.

gain in power to estimate heavier ones, while practice in estimating the lengths of lines failed to produce an invariable gain in the ability to estimate longer and shorter ones.

Transference in sensory discrimination dependent on "identical" elements

Professor Thorndike ascribes the transfer of practice effects in these experiments to "(1) the acquisition during special training of ideas of method and of general utility, and also (2) of facility with certain elements that appeared in many other complexes." An "instance of (1) is learning . . . that one has a tendency to overestimate all areas, and consciously making a discount for this tendency, . . . of (2) is the uniform increase in speed of eye movements in all the tests through training in one, an increase of speed often gained at the expense of accuracy."

Experiments of Coover and Angell. Similar results

Coover and Angell[1] discovered that training in tone discrimination produced a beneficial effect upon the discrimination of shades of color. The causes of this transference they sum up as, (*a*) "The formation of a habit of reacting directly to a stimulus without useless kinæsthetic, acoustic and motor accompaniments of recognition, which results in (*b*) an equitable distribution of attention to the various possible reactions so as to be about equally prepared for all; and (*c*) the consequent power of concentrating the attention throughout the whole series without distraction."

It will be seen that the general improvement here lies in a strengthening of the ability to attend. Professor Angell, commenting again[2] on these experiments and their significance, seems to regard this improvement as largely to be explained by "the habituation which is afforded in neglecting or otherwise suppressing unpleasant or distracting sensations. We learn to 'stand it,' in short." This power, he thinks, may be derived from attention to the classics and be transferred to other difficult tasks in life.

[1] *Amer. Journal of Psych.*, 1907, p. 328. [2] *Ed. Rev.*, June, 1908.

(2–*b*) *The effect of special training on the general rapidity and accuracy of motor adjustments.* It will be observed that in the experiments of Thorndike and Woodworth, and of Angell and Coover the motor reactions, except as they contribute to more accurate discrimination, are comparatively unimportant. It is true that, where rapidity of discrimination as well as accuracy are in question, the attempt to discriminate quickly might tangle up the motor machinery involved in the responses, and errors due to this confusion might be ascribed to false perception. However, since there is only one response to each element discriminated, unless this is a new and as yet not thoroughly learned reaction it will probably follow a sufficiently clear perception without difficulty. But these reactions consist merely in crossing out words or in naming or estimating by well-known words. Therefore, the experiments test discrimination rather than motor adjustment.

Motor adjustments so far not involved

Professor Judd gives an experiment[1] in which the latter factor is concerned. The person tested was required to place a pencil which he held in his hand in the same direction as lines which were exposed momentarily to his vision. The hand and the arm were concealed from his view, so that the eyes were unable to observe directly errors in placing the pencil. It was found that fuller visual experience with one of the lines led to a more accurate placing of the pencil in its direction. When, after this practice, the other lines were shown as at first, it was found that there was improvement in the representation where the original error had been in the same direction as that of the practice line, but the representations of other lines grew worse. Thus Professor Judd concludes that the results of practice can be transferred, and that the effect may be improvement or interference. Moreover, since subsequent practice by the fuller exposure of one of the misrepresented lines failed

Judd's experiment on placing a pencil. Interference

[1] *Ed. Rev.*, June, 1908.

to produce improvement, the experimenter thinks that a habit had been formed that resisted the effects of further practice. Experiments on geometrical illusions showed that when the subject was aware of improvement in correcting the illusion and of its reasons, he found it possible to overcome this interference when an illusion of an opposite character was set before him. When, however, such knowledge was absent, the tendency toward interference remained as a fixed habit.

Interference due to (1) failure to discriminate the proper sensory cue to a reaction; or to

In Judd's first experiment the sensory factors and their meaning in terms of the reaction are not clearly apprehended by the subject. He gets a better view of the practice line, and this helps him in a vague way to place the pencil better. The reason for interference lies in the fact that, so far as the subject perceives or feels, all the representations should be corrected in the same way. Interference plainly arises where in new situations the sensory cue that should lead to a different reaction is not apprehended. It may also appear where the same sensory suggestion is now to be responded to by a different reaction. As the former case is illustrated in the experiments of Judd, so the latter appears in those of Bergström.[1]

(2) change in this sensory cue, as seen in (*a*) Bergström's experiments,

Bergström studied the interference of certain habits with the ability to perform opposed acts. He used a pack of eighty cards, each having a picture on its face. Each picture appeared on eight of the cards. The experiment consisted in sorting the cards according to the pictures, and then in re-sorting them, placing each pile in a different position from the one it occupied at first. In the beginning, the re-sorting took more time than the original act. This interference tends to decrease with the more extended practice in sorting the piles in the various positions.

Munsterberg[2] experimented on the effect of changing his

[1] *Amer. Journal of Psych.*, VI, p. 433.
[2] *Gedächtnisstudien*, Teil I, Heft 4, 1892.

watch from one pocket to the other. Whenever such a change was made, there followed a period during which the hand would unconsciously fumble in the wrong pocket in the endeavor to take out the watch. With practice in the interchange, however, the rapidity of readjustment to a different position of the watch was greatly increased. Similar results were obtained from the interchange of two inkwells, one full, the other empty, which were placed on the table where he was writing; also by locking now one, now another of the two doors by which he could enter his office. Thus, he concludes, the power to substitute for one habit an opposed one can be improved by practice.

(*b*) Munsterberg's experiments

In so far as new reactions contain elements identical with some appearing in old ones, they may be facilitated by the power previously acquired. Bair[1] found that practice in copying on a typewriter a series of letters in which only six distinct letters were used improved one's power to copy another series of equal length made up of a different set of letters or figures. The keys of the typewriter were capped so as to place any symbol on any key, and thus the effect of previous familiarity with the machine was eliminated from the experiment. He also found that practice in repeating the alphabet with the letter *n* spoken after each letter increased the power to repeat it with the letter *x* or the letter *r* thus introduced.

Transference where reactions have common elements. Bair's experiments

(2–*c*) *The effect of special training on the general rapidity and accuracy of memorizing.* We notice here first the observations of Professor James,[2] — a contribution that may be said to have initiated the experimental phase of the discussion of formal discipline. He found that, after practice in committing to memory parts of Book I of *Paradise Lost*, his power to memo-

James's experiments on practice in memorizing. Improvement in memory due to better methods

[1] *Psych. Rev.*, Mon. Supplement, No. 19.
[2] *Principles of Psych.*, Vol. I, p. 667.

rize other verses seemed to have decreased. Three other subjects noted an insignificant gain as a result of practice, while a fourth suffered a similar loss. He concludes, "All improvement of memory consists in the improvement of one's habitual method of recording the facts."

Confirmation of this view in (1) experiments of Ebert and Meumann;

Ebert and Meumann[1] found that practice in committing to memory nonsense syllables, in the course of which an endeavor was made to discover which methods of learning were most economical, effected constant improvement in the power to learn and to retain series of nonsense syllables, letters, words, and lines of poetry or of prose. The amount of improvement was in a general way proportional to the similarity between the test material and the practice material. The observations of the subjects of the experiments seemed to indicate that they would attribute the increase in power to the discovery of what to each was his most efficient method of memorizing, and the gradual elimination of the other devices. Thus the theoretical view of James would be confirmed, although Ebert and Meumann were inclined to credit the existence of something that might be called general improvement of the memory.

(2) experiments of Fracker;

Another very careful, prolonged, and somewhat complicated research "On the Transference of Training in Memory" is that of Dr. Fracker.[2] He found that practice in committing to memory the order of four tones gradually led to an improvement in the power to remember poetry, the order of presentation of four shades of gray, of nine tones, of nine shades of gray, of nine geometrical figures, of nine numbers, and of the extent of arm movements. The improvement was neither uniform nor invariable. He concludes that his results are in accord with those of James, "inasmuch as all the factors we have discovered have to do with methods." He considers improve-

[1] *Arch. f. d. gesam. Psych.*, Vol. IV, p. 1.
[2] *Psych. Rev.*, Mon. Supplement, Vol. IX, No. 2.

ment "to depend upon the consistent use of some form of imagery, whether it is the most advantageous or not." In further summary he says: —

"Imagery may be subconsciously developed, but if it comes to be consciously recognized, the improvement is more rapid. The rate of improvement seems to depend directly upon the conscious recognition of imagery and upon attention to its use."

"A change in imagery during practice increases the rapidity of the improvement, if a better form is adopted and adhered to. It may prevent improvement if a change of imagery is frequent, or if a less adequate form is adopted."

(3) experiments of Winch. Greater chance for improvement in children than in older persons

In concluding this sketch of experiments on memory, we might note the results of Winch[1] with British school children. After testing three classes of children of different social standing in power to commit to memory poetry, he divided each into two groups of equal ability. One division was trained by being required to commit to memory one hundred words of poetry. A second test showed 10 per cent more improvement on the part of this group than on that of the untrained one. This large gain from a small amount of practice is, doubtless, the sudden accession of power that comes from a few fundamental advances in method. It may be profitably contrasted with the results of the experiments of James, with whose subjects, doubtless, the methods of memorizing had been fairly well exploited before the experimentation began. Thus in training the memory, as in training the senses or the motor powers, the general improvement rests back upon identical elements in the practice and the test material. Whenever similar situations recur, a recognition of their similarity leads to a utilization in the new cases of the reactions found advantageous in the older ones. A specific task of memorizing, such as is

[1] *British Journal of Psych.*, Vol. II, p. 284.

involved in each of these experiments, is a case where the similarity is, as it were, forced upon the attention. Hence all the devices that can be transferred are in each test definitely summoned forth, and improvement is, to say the least, likely, unless at the initiation of the experiments the subject was already a master of methods of memorizing. And even masters can learn!

Bagley's experiment

(3) *The effect of special habits on general behavior.* Under this very large heading I will recount only one simple experiment reported by Professor Bagley.[1] School children were trained to be neat in arithmetic papers. They showed no tendency to improve the neatness of papers written in connection with other subjects.

Identical elements as involving both the content and the form of situations

When we compare the conclusions of these experimenters, we find a substantial unanimity of opinion. It is agreed that wherever practice in one exercise leads to improvement in another certain specific elements in both are identical, and call forth identical responses which promote success in both exercises. The identical elements that are thus distinguished may be divided into two groups, those of content and those of form. As examples of content elements we may mention sounds, colors, letters, nonsense syllables, words, objects, kinds of geometrical figures, standards of measurements, ideas, etc. As one grows familiar with such elements, the power to remember them, and to attend to them when they appear in new situations, and to do what they suggest increases. The elements of form may be said to consist of the characteristics that various situations present as problems for the attacking mind. Thus we recognize one situation as a problem of memorizing where from the nature of the material a particular method of committing to memory may be especially useful. Again, we recognize the need of particular adjust-

[1] *The Educative Process*, Ch. XIII.

ments of perception, such as eye movements which we have already practiced. All situations demand adjustments of attention, some of which may invariably be necessary, while others may suit especially specific kinds of material.

Discipline as specific and general

We observe that elements of form and elements of content are equally specific, equally capable of definition. Moreover, both are capable of generalization; that is, both are capable of appearing in a variety of settings. The problem of general training is, then, quite as much one of discipline in content as it is of discipline in form. A better division of mental discipline for our purposes would be into two phases, which we may denominate specific discipline and general discipline. Specific discipline consists in the analysis of the specific elements which are found to be critical in determining certain reactions, and in the practice by which the appropriate reaction is made the habitual response to each element thus discriminated. General discipline consists of training in the recognition of these critical elements in a variety of situations.

Bagley's experiment illustrative of the lack of each sort of discipline

The successful transference of any result of practice or experience depends upon both these phases of discipline. The failure to transfer neatness from arithmetic papers to others in the experiment by Bagley is, doubtless, due to some lack of efficiency in both respects. The specific discipline failed in attaching the reactions connected with neatness with elements which in any situation were expected to call forth these responses. The suggestion which in the practice was associated with neatness was not the thought of any exercise to be presented to the inspection of a teacher, but rather that of an arithmetic paper to be presented to a teacher *who insists on neatness*. Very naturally, when any of these factors was absent, the children failed to make the response which was associated with the entire group. Or, if, as is likely, we may call the command of the teacher in question the critical sug-

gesting stimulus to put forth the effort desired, then the reason for the lack of transference was that the identical element that prompted the desired reactions was absent from all the test material. No child would be neat unless there were some reason for it, and the only reason that had so far appealed to the children was the desirability of conforming to the requirement of the teacher.

In the second place, the experiment illustrates the lack of any attempt to secure general discipline. If the children had been trained to be neat not only in arithmetic papers, but also in many others, and if many teachers had conspired to enforce this demand, it would have been much more likely that the children would have recognized in some new paper that they were required to present an occasion for the exercise of the virtue in question than they would after any amount of specific drill in neatness in any one connection.[1]

Interference (1) from the lack of specific discipline, (2) from the lack of critical application of the habit

We have noted two conditions that give rise to interference. In the first case a given reaction is attached to a vague unanalyzed situation rather than to the specific element in that emergency to which it constitutes the proper response. In consequence, other situations superficially resembling the first call forth the reaction, even though the real reason for this reaction is wanting. Thus all diseases are treated by the savage medicine man or the Christian Scientist alike. The faith that cures is not properly fitted to the specific condition for which it has real therapeutic value. The fault here lies plainly in inadequate specific discipline. The second case of interference appears where in a new situation a different reaction should be made to a stimulus than the one originally learned. This is illustrated in the experiments of Bergström

[1] Ruediger, *Principles of Education*, 108–110, gives an account of supplementary experiments on neatness, in which the limitations of Bagley's experiment are in a measure removed, with great consquent gain in transference.

and Münsterberg. Here the reaction to a given stimulus was arbitrarily made different. In the practical emergencies of life this form of interference arises because in different circumstances the same stimulus should be responded to differently. The personal influence by which one has never yet failed to win a child to proper conduct may fail because other influences are leading the child to react differently to the counsels of his mentor. In such cases successful transference depends upon the accurate discrimination of each element in the situation that is critical in determining its treatment, and either the habit or the mental grasp and judgment that correlates these, and from this complex suggestion initiates the proper response. Again, we may say the fault lies in specific discipline.

In general, we may then say that interference always arises from a lack of critical care, either in forming the habit or in utilizing it. The critical forming of the habit is the task of specific discipline. The critical use of the habit depends to a considerable extent upon such familiarity with a variety of cases where the habit might be resorted to as insures caution in its application. Thus it is very largely a matter of general discipline. However, the main problem of general discipline is, not to prevent interference from the transfer of wrong reactions, but rather to insure the transference of the right ones. This it does by making us alert to the critical suggestions wherever they may appear.

Conclusions in regard to formal discipline

We may conclude, then, that there is something which may appropriately be called formal discipline, and that it may be more or less general in character. It consists in the establishment of habitual reactions that correspond to the form of situations. These reactions foster adjustments, attitudes, and ideas that favor the successful dealing with the emergencies that rouse them. On the other hand, both the form that we can learn to deal with more effectively, and the reactions that

we associate with it, are definite. There is no general training of the powers or faculties, so far as we can determine. Formal discipline improves mental efficiency wherever new situations correspond in form to ones the treatment of which has been mastered, provided one recognizes or feels this similarity. Such training, like any other culture, consists in the establishment of habits of thought and action that will prove useful along dependent lines of development.

These habits, once established, govern our future activities. Thus it may be said that the transference of training, instead of being an exceptional affair, is the rule. The novelty of a new situation may or may not be felt or apprehended. In the latter case it will be treated as an old one would be, and the corresponding habits will be transferred uncritically. If the newness is noticed, reaction will be slower, but whenever it comes, it will inevitably consist of the responses that are associated with whatever is felt or seen to be familiar in the emergency. Thus the inherent need of action forces transference, generalization ; and the inherent need of success compels us to correct such transference as, in the phraseology of our experiments, has resulted in interference.

Transference and the education of the reason

At bottom successful transference to situations that are more or less new is a matter of intelligence. Of course, one can learn by trial and error methods, and in that event it is well to have in one's equipment of resources a habit or group of habits that will apply, if only we can pick out what we want. However, ideational processes greatly enhance the likelihood of immediately successful transference. The problem of whether we can train these was discussed in the last chapter. It will be noted that what has just been called specific discipline, or the formation of an association between a reaction and its universal stimulus, corresponds to the formation of concepts. On the other hand, general discipline, or training to recognize

these critical stimuli in new surroundings, corresponds to that inductive method by which concepts are so widely associated with concrete situations that they are apt to be recalled when they are needed. It is evident also that successful transference is fostered not only by such forms of discipline, but also by the power to take the attitudes of originality and of criticism.

Section 34. *The theory of formal discipline as an educational principle*

Educational principles relating to formal discipline

If we were to sum up the general principles of educational practice that can be deduced from the preceding discussion of the theory of formal discipline, they could be stated about as follows: (1) There is no general training of mental power entirely apart from the establishment of definite associations. (2) The associations established by discipline may involve responses to the form of a situation, or that about it which suggests to the mind a general mode of treatment. Training of this sort may be called formal discipline, but it is no less definite than instruction in content. (3) Reactions of method, such as result from formal discipline, probably are, on the whole, more widely useful than are definite pieces of information. There are fewer associations to be established by formal discipline, but these can be utilized in a wider field of service. (4) To secure this wider service, or to bring about successful transference, requires a special sort of training, entirely apart from the mere establishments of the specific associations involved. The school does not get general power unless it works for this. (5) Subjects should not be chosen for their formal discipline alone. Training in method is most economical and most effective when it is given in connection with content the mastery of which is in itself valuable. Some of these points require a little more extended discussion.

(1) Abandonment of the culture of the faculties

(1) The disappearance of the view that there is a vague general culture of the faculties through use is doubtless a distinct step ahead in education. It does away with a comfortable acquiescence in the existing state of affairs, and opens the way for criticism and progress and definite choice as to the subject matter of the curriculum. Moreover, it offers to school method a problem which hitherto has been inadequately realized; namely, the problem of bringing about really general effects. Since their attainment cannot be taken for granted, the school must find out how this can be brought about, or give up this important phase in its work, and content itself in training for certain special situations, which can be quite definitely foreseen.

Resulting advantages

(2) Formal discipline as training in reactions to form

(2) If the phrase "formal discipline" is defined in such a way as to mean training in those methods of treatment that are adapted to what might be called the form of a situation, it is important to note that these adjustments are quite definite in character. In criticising the disciplinary training given in the experiments reported by Professor Bagley, it was noted that there was an absence of both specific and of general discipline. On the one hand, the children were not trained to recognize that general characteristic of various situations which constitutes them occasions for the display of neatness, and, on the other, there was no attempt to teach the classes to recognize this critical characteristic in various surroundings. Formal discipline is specific; that is, definite. It involves definite stimuli and definite responses.

Definiteness of this

Difficulty in defining neatness

If we try to realize what these definite factors are, we find that their analysis is not altogether a simple affair. To continue with the illustration used above, it is evident that there are many kinds of neatness, that they differ as to the character of the situations that require them, and also as to the reactions that they involve. There is neatness in written work in the

school, neatness in dress, neatness in arranging one's possessions, etc. However, there must be something in common, both in respect to the occasions for neatness and the methods of attaining it; otherwise they could scarcely be covered by a single word. Professor Bagley declares that the general element is the "ideal" of neatness, which involves a new set of habits for each situation. This ideal, he believes, can be implanted by instruction in the mind, and its existence facilitates, in his judgment, the formation of a special set of adjustments by which one may conform to its requirements in a special case. If we have the general ideal of neatness, we will be apt to think of it when we dispose the materials on our study tables, and find out by experiment what sort of arrangement yields the desired result.

Neatness a definite quality in respect to its occasion, its criterion, and its reactions

What is this ideal of neatness? If it be not definite in regard to the occasions that suggest it, and the activities and results that satisfy it, one can scarcely see how it can form a stimulus to readjustment. Analysis would seem to reveal these specific factors. In general, the need for neatness arises wherever one is arranging material to be submitted later to the inspection or use either of himself or of some one else. Neatness means such a disposition of that material as insures a pleasing, and in so far an æsthetic, effect on the eye, a ready inspection of the items arranged, or a convenient utilization of them, when they are needed. In short, neatness is that orderly arrangement that makes for efficiency, and contributes, doubtless partly because of this quality, to æsthetic satisfaction. The various factors that make up neatness differ widely with the material involved. Usually they include cleanness, — although to some this conception may be distinct. Dirt, which has been defined as matter out of place, must be absent. This includes blots on paper, spots on clothing, and dust or refuse papers on a study table. In general, however, dirt can be

recognized by the definite criterion just suggested. Orderly arrangement again varies with circumstances. So far as written school work is concerned, it means legibility, and such an arrangement of material as favors easy inspection. The arrangement desirable in arithmetic would, of course, differ from that required in English. Nevertheless, there is a perfectly definite, yet perfectly general criterion, which we apply to test whether we have succeeded in getting neat effects. We simply inspect, and judge from the sense of satisfaction, and the ease we feel or think others will feel in scanning the material under criticism whether it can be justly regarded as neat.

Variation and readjustment in details of neatness

Thus neatness is a definite quality, tested by a definite criterion, and demanded by a definite type of situation. The detailed factors of the quality vary from case to case, but there is always sameness in the fundamental factors. The task of specific discipline is to effect the association between the common characteristics of situations requiring neatness and the criterion by which its presence may be tested. In addition, many definite ways of securing neatness, some more, some less general, may be learned or associated with the desire to display this quality. These offer a basis for experimentation, wherever new devices are necessary to secure the proper effect.

(3) Formal discipline as the most general form of culture

(3) We commonly assume that formal discipline is more general than any other kind. This is probably true, though unimportant. It is evident that formal elements are relational in character. When one speaks of classes of situations, he has in mind usually, if not invariably, groupings according to form, such groupings as are based on the relation of the situations to our practical life. Neatness is a requirement of a form of situations, because it cannot be defined apart from the relation between its material and the persons who inspect or use it. Such relationships may be very general. Indeed,

it is likely that they are far more general than are the content factors which they relate. The need of memorizing is more commonly encountered in experience than is any fact that one needs to memorize. It is difficult to draw a hard and fast distinction between the relational and the related factors, the form and the content, of experience. However, it is evident that where emphasis is thrown on relation, there we have form, and that there are certain fundamental forms that constitute typical problems, the power to deal with which is a constant asset throughout life. The acquisition of this power may properly be designated as formal discipline. Thus we may speak of training to attend, by which we mean to assume the physiological and mental adjustments of attention, some of which are more and some less general, as being formal discipline in so far as it is independent of the content to which attention is given. Moreover, as the adjustments become more and more adapted peculiarly to one content, the merely formal character of the discipline would seem to be lost. Attention to a color is dependent on the memory of this color, as well as upon the general adjustments of attention. On the other hand, it must not be forgotten that content elements constantly recur in new contexts, and so may be regarded as general in character. Whatever is worth knowing can be used repeatedly. The same color may appear again and again, and be a factor in problems that appeal to attention, memory, judgment, and will. Wherever it appears, there will be somewhat of similarity in the situations and in the reactions demanded. Knowledge is always of the universal and for the sake of determining readjustment. If it seems natural and appropriate to designate one phase of a situation as its form, and another as its content, it must be remembered that the part of discipline in reference to each is the same; *i.e.* to establish associations and reactions which these factors, when they recur, may invariably

The problem of discipline the same for both form and content

suggest. Moreover, discipline in adjustments to a few type forms would not be of any value if it were not sustained by familiarity with the treatment of a multitude of facts.

(4) General discipline necessary to effective transference

(4) But education, whether in form or in content, does not sum itself up in specific discipline, in the establishment of definite associations. It includes also general discipline, or the training of the power to recognize the occasions for the use of habits or knowledge. The school in its drill has often failed to single out the universal stimulus, occasion, or reason for the habit it teaches. It has just drilled; drilled without intelligence, and so in such a way as to preclude much transfer of its effects. But even intelligent drill is not enough. There must be training to make this intelligence available and forthcoming when it is needed. General power may come of itself, but it is likely that it will not come in any great measure unless it has been nursed by training. General discipline is that sort of culture which we have discussed in connection with the education of the reason. Habits, like any resources, are made available, not alone by being shaken loose from dependence upon a narrow group of accidental associations, but also by the acquisition of a great and varied mass of connections, accidental or essential, so that their recall in a new concrete situation may not depend on too tenuous a thread. Again, the formal discipline of the school to be transferred most successfully should be acquired in a school atmosphere that resembles as much as possible that of life. Moreover, since life is varied, and requires the application of habits and principles with proper emendation according to circumstances, the school environment should be varied and consist of problems in the application of habits as well as knowledge. Most important of all the habits that discipline can inculcate are those rational attitudes of originality and criticism, the assumption of which is the most favorable condition for the wide and accurate ap-

Analogy with effective training in concepts

plication of other attitudes and adjustments that culture has instilled.

(5) When we come to the matter of the curriculum, it is evident that no study should exist in the school simply because it exercises a few general powers and develops a few habits that may be extensively employed. The only adequate justification of a subject is that the habits and the experience that it furnishes sum up a more valuable total than the habits and experience that its introduction excludes from the curriculum. In this comparison, no gain is made by separating formal from content values. Both are equally specific, and may be equally general. The method of study is a factor of the greatest importance, but because of this fact it is a value most generally present among the educational advantages of subjects and, therefore, least available as a criterion of their relative excellence. Men are prone to think that a subject worth while only for its methods is for that reason more valuable for method than any other. The exact contrary is more nearly the fact; for, as we have seen, a method studied in connection with a variety of matter corresponding to that which is mastered in life through its employment is one most likely to be transferred to living situations.

(5) No study should be given merely for formal discipline

Here it may be urged that we are forgetting the importance of intensive as against extensive study. It is a common opinion that work in which certain methods are dwelt on to the exclusion of other interests brings these methods into clear relief, emphasizes their nature, and drills in their use, so that the pupils really become masters of them in a degree impossible were the mind absorbed in a content to the comprehension of which such methods are only auxiliary. While we may grant the importance of intensive study to be fundamental, we may still maintain that, taken by itself, its results are narrow. For the sake of discrimination and drill certain stimuli and

Intensive training in method should be combined with its use with living problems

their reactions must be isolated and practiced, but for the sake of their practical application these ideas and habits must be illustrated and used in a variety of concrete cases, where the main interest is not the method but the results that are attained through its use. Thus in the last analysis method and content are interwoven, and there is no mastery of the one apart from a grip upon the other.

Difficulty in appraising the value of subjects

It follows that no subject can really justify itself except by showing that it is through and through interpenetrated with vitality. Content and form should both contribute, and contribute in alliance with each other, to living efficiency. Here we encounter the objection that in modern life the conditions are so complex and variable that it is exceedingly difficult to determine with any approach to conclusiveness the relative value of subjects for practical efficiency. Indeed, if this question were settled for one, it would by no means be settled for all, and any appraisement of value for one time would doubtless have to be modified before many years had passed. The argument from formal discipline has, as we have seen, gained much of its attractiveness from the difficulty of substituting for it satisfactory methods of determining relative value. However, this difficulty should not blind us to the inadequacy of the conception as a criterion. Disciplinary values depend in final reduction upon the same factors as any other ones. We can no longer plead the conception of a vague culture of the faculties. Our scientific sense cries out for something more definite, more decisive. Perhaps the organization of educational research, of which we are now witnessing the beginning, may hold in store for us at least an approximation to the solution of our problem.

Conclusion

In conclusion, then, it seems likely that the psychologists have done a great service to education in setting aside the old conception of a vague formal discipline, and thereby clearing

the way for a study of definite disciplinary effects and the method by which they may most effectively be realized. While teachers will doubtless continue, as in the past, to value most highly those general attitudes and adjustments which constitute the methods by which the human mind approaches various classes of problems, they will strive to ascertain the exact nature of these, to appraise them, and to set them side by side with the knowledge of content, apart from which they can neither be acquired nor utilized.

CHAPTER XI

IMITATION

SECTION 35. *The function of imitation*

Imitation the most general form of educative activity

THE great stress that genetic psychology and sociology have placed upon imitation is, doubtless, in large measure justified. While it is possible that the formula of the "circular activity"[1] is not all-explanatory in the growth of human powers, and that the epigram "society is imitation"[2] is an inadequate account of this institution, nevertheless, these conceptions have unquestionably contributed an enormous amount to the comprehension of mental and social evolution. The form of imitation is one of the simplest and most universal that the process of individual readjustment can take. Granted that the customs of others are well selected, one may save an enormous amount of experimentation if he has a tendency to imitate them. In general, these customs are far more useful than anything that the individual could learn without imitating. Hence imitation, so far from being regarded with scorn, should be considered as the most nearly omnipresent form that educative activity assumes. Recapitulatory education, as social heredity, consists largely of imitations.

Imitation especially valuable as a socializing agency

The adjustments learned by imitation find their especial value in affording adaptation to social life. However, they may help the individual to effective action in cases where only isolated activity is concerned. Men imitate methods of hunting

[1] Compare Baldwin, *Mental Development, Methods and Processes.*
[2] Compare Tarde, *The Laws of Imitation.*

and fishing, the construction and manipulation of tools, making and using fire, clothing, etc., thus increasing vastly the efficiency of the individual. But in helping them to coöperate, imitation is doing a service that far surpasses anything it can give in any other direction. Coöperation may in its later developments admit of individuality and specialization, but it finds its foundations in social solidarity or conformity, in likeness in action, feeling, and thought among the members of the social group. It is mass activity rather than the division of labor that renders early society especially effective. In attack, in defense, in warning of danger, or in disseminating information, in assisting in the gaining of food, or in sharing with those who are temporarily unable to get what they need, and the like, we find the fundamental uses of social life. In fact, it is only to further these basic common purposes that specialization exists.

Consequent survival value of imitativeness

Coöperation is so valuable an instrumentality in the struggle for existence that the societies that survive are as a rule those that develop a maximum of such activity. Primarily social action is a matter of instinct, but of instinct that in the higher animals is supplemented and in man overshadowed by imitation. Heredity gives a foundation of similar functions, but imitation brings into conformity the methods by which these are carried out. It reduces to the uniform the actions, thoughts, and feelings of men. This uniformity enables them to get on with each other, and to mass activity upon common purposes. Hence man, when he becomes more social, becomes more imitative, and since social action is so important an adjustment, mankind, especially civilized man, seems to get by far the most important part of his education through imitation.

Learning by imitation finds its great effectiveness in that it goes on without any conscious purpose. By the mechanism of certain psycho-physiological laws one inevitably imitates

Imitation illustrated in all phases of learning

the models that his environment presents. Of course, in its more advanced forms, imitation is under the control of will and directed by reason. Thus there are all stages of learning by imitation, from mere trial and error approximation to a pattern not consciously imitated to deliberate copying of a model supposed to be desirable. When one has imitated blindly an effective way of acting or thinking, he tends to realize the value of the result, and in the future to look more and more to the models of others, as something attention to which cannot fail to produce good effects.

Imitation a selective process, for (1) it transmits selected habits;

Fundamentally imitation does not create any resources of mind or body, but simply furthers a selective process that is ordinarily of very great advantage. One can imitate only what he can do, and, indeed, as a rule, what he has already done, or something very like it. When we seem to copy some novel act, what we really do is to call upon our resources, in order, by experimentation with them, to approximate to the model that constrains us. This model is a selective agency, serving to eliminate our false efforts. Through its control we build up rapidly a habit, which, because it has been tested by the practice of society, perhaps for ages, is, as it were, the embodiment of ages of elimination. Imitation saves time and effort in experimentation. It is an agency of economy, of selection.

(2) it is enforced by social pressure, — a selective agency;

This selective function of imitation continues in evidence in connection with the insights and standards that it helps to bring to consciousness. These are especially associated with the constitution and mechanism of society. Since society is so important an agency for survival, the efforts of man are directed largely toward adaptation to the social environment, through which all other necessities of life are to be obtained. Social adaptation is, as we have seen, largely a matter of imitation. Moreover, not only the welfare of the individual, but of others

in society depends upon the extent to which he conforms or imitates. The imitative person is the socially desirable person. It becomes, therefore, the interest of society to compel its members to imitate. By instinct or conscious purpose it neglects, harries, banishes, outlaws, destroys the individual who fails to conform, and so to coöperate. Thus natural selection is supplemented by social selection in the elimination of the non-imitative.

(3) it leads to a knowledge of social standards, and of the minds that think them

The intensity of this social pressure forces more clearly upon the mind of the individual the great importance to him of doing and thinking after the fashion of others. The conception of social practice, opinion, and attitude becomes a standard of judgment in the selection of efficient conduct. In order to understand how to conform, the individual must know not only what others are doing now, but he must learn the general principles that govern their actions. He must penetrate into the nature of his companions. This means that he must develop a clear consciousness of self and of others; that is, of what may be called the social elements. He must realize the standards to which other persons are striving to conform, standards which they are applying to him in their judgments of his conduct. He must attain a fairly universal concept of himself in order to judge as to whether he is, on the whole, conforming properly to the principles of social conduct. In short, the comprehension of that general standard, the socially acceptable, leads to the conception of personality both in self and in others, and to the specific norms on the basis of which social conformity may be attained.

The selected products of imitation as a basis for expansion of resources

Imitation operates selectively, but it is also the most excellent example of how selection operates to expand resources. It will be remembered[1] that this comes about through (1) the establishment of fundamental habits or concepts, out of

[1] Compare § 27.

the combination of which an enormous number of effective constructions can be made in order to deal with new, complicated situations; (2) the construction and reconstruction of experience by the application of standard concepts, so that perception becomes sharper and richer in background, memory more accurate and complete, and the memory of the individual expanded into conformity with the memory of the social group; (3) the reënforcement of the memory of habit by bringing it into conformity with the logical relationships revealed by the analysis and criticism of the concepts. Imitation affords help in all these directions. Perhaps the best example of its effectiveness is to be found in language. Articulate language is acquired through imitation. But it sharpens our apprehension of the qualities that we perceive; it stimulates, defines, and strengthens the imagination. Both as oral and written, it offers a most extraordinary help to memory, ultimately enabling the individual to seize and retain a clear and consistent picture not only of his own past, but also of the minds of others and the experience of the race. The effects of language upon mental resources are merely typical of those of any product of imitative activity.

Summary

The general function of imitation is, then, to be found in the guidance it affords to the process of experimentation. Through conscious or unconscious constraint of attention to the models afforded by others we very rapidly attain adjustments that undirected experimentation would find very difficult or impossible. These adjustments may enable the individual to deal directly with nature or to coöperate with society. The latter type of adjustment constitutes the most extensive and valuable of the contributions of imitation to the equipment of man. In society it is necessary that nearly all should coöperate, or conform, if any are to gain an advantage from this source. Hence society compels conformity, imitation. Thus we imi-

tate, not only unconsciously and because we see the advantage of adopting the habits of others, but also because we cannot get on without accepting their standards. In striving to attain these, we must come into a knowledge of the prevailing ideals and customs, and hence must become acquainted with the minds of others and with our own personality. All this is essentially a process of selection, contributory to judgment, but it reacts on one's resources by clarifying them, criticising them, using them in reconstructing and in constructing images and ideas, the memories of one's past, and of the race. Knowledge systematized is apt to be firmly memorized, and hence rendered readily available. The selective function of imitation, and the resulting enrichment of the mind, is well illustrated by language, one of its most important products.

Section 36. *Psycho-physiological mechanism of imitation*

Definition of imitation

Imitation may be defined as the reproduction of the acts of others as a result of perceiving or remembering them. The term has been applied in a wider sense to include the repetition of one's previous acts, as in the case of habits, or the revival of earlier mental states, as in memory. Here one is said to imitate himself. But while the associations that explain habit and memory also explain imitation, it is, perhaps, better in the discussion of imitation as a form of education to confine the concept to acts or ideas suggested by others.

Imitation as both instinctive and acquired

From the point of view of their genesis, acts of imitation may be divided into those which are instinctive and those which are learned or acquired. It must be kept in mind that what is instinctive or acquired is the tendency to perform an act in response to the perception or thought of it. Instinctive imitative acts seem to find illustration frequently both in animals and in men. Among timid animals, such as sheep, the per-

ception of a companion running as from fear will usually start imitative acts. Not only in the stampede, but also in other activities, such as those of the search for food, etc., we find what seems like instinctive imitation among the lower animals. Of course, it is always possible to suppose that the direct stimulus to the imitative act is not the perception of the activity of others, but rather some idea of danger, food, or the like which is suggested by this perception. What actually happens on this notion is, for example, that the chicken perceives another chicken scratching. This suggests the notion of food, and this notion in turn causes the chicken that gets it to scratch.

Formation of the "imitative association"

Whatever we may say about instinctive acts, it is certain that there are many imitative acts that are acquired. One learns to perform an act on perceiving another do it. Without doubt, the physiological process by which this is accomplished consists in the formation of an association in the cortex of the brain between the sensory areas that are excited when one perceives or imagines a certain act, and the motor areas that control the performance of this act. The establishment of such an association means the acquisition of control over the movement. Such control is originally a product of experimental activity. It rests back apparently on the following physiological law of association. When different parts of the cortex of the brain are excited simultaneously or in immediate succession, and the accompanying experiences are satisfactory, the two parts tend to become connected, so that the subsequent reëxcitement of the one tends to stir up the other. Now as the child moves in a random, uncontrolled fashion, he at the same time gets sensations that result from this action. He perceives through sight, or hearing, or touch, or, at any rate, through the kinæsthetic sense, what he has done. The sensory areas involved in perceiving the act are thus excited at practically the same time as the motor area the random stimulation

of which produced it. Hence these regions become associated; that is, if the sense of the activity in question is satisfactory. The establishment of this association means that in the future the excitement of the sensory areas in connection with the perception or thought of this act will tend to spread into the motor area that controls it. Hence it will be imitated.

Imitative associations dependent on the performance of the acts they control

It is evident that, unless the association just described exists in the brain, the perception of an act will not lead, except by chance or by voluntary experiment, to its reproduction. Hence children do not learn to do things primarily by perceiving them done by others, but only as a result of their own activity. Only thus are the motor areas that control their muscles brought into the proper association with the sensory areas concerned in the perception of the movements. The perception of the acts of others may, however, start random experimentation, which eventuates in the successful reproduction of these movements. In that case, the association by which imitation is made possible is established, and this is the method of much learning by imitation.

Rise of "circular activity" and the imitative age

Clearly enough, whenever the child moves, whether it be reflex, instinctive, random, or experimental activity, the results are apt to be perceived, and the sensori-motor association, which may, perhaps, properly be called the "imitative association," tends to be formed. Thus in a short time the child has developed an enormous number of such associations. Their existence involves the "circular activity" of Professor Baldwin. This consists in the tendency for an act to be continually repeated, because its performance leads to its perception, and this again to its performance. Children display this tendency to prolonged repetition. Moreover, when a child has formed many of the "imitative associations" he tends to reproduce of necessity many perceived acts. Anything that he can do, or anything like what he can do, will be

mechanically imitated. He reaches an imitative age, in which his actions seem largely to consist of mimicry.

Imitation as determining the associations that shall survive

Such imitation of what the child has already learned to do strengthens the associations involved into firmer habits. On the other hand, the imitative association, if it be not stirred into activity by the perception of others performing the act to which it leads, will tend to die out for lack of use and nourishment. Thus imitation determines survival among the incipient associations, stimulating some and so building them up into habits, and eliminating others. This process may not improperly be called a form of learning by imitation.

We may distinguish three forms of learning by imitation. (1) The learning that consists in imitative formation of habits out of some incipient associations, and the neglect of others. This may be regarded as learning, inasmuch as the habits that are thus established are, on the whole, those best calculated to enable the individual to get on. Like all learning, this process is one of experimentation and selection. The experiments are associations, most of which are initiated by non-imitative impulses. The selection is under the control of imitation. (2) Many acts are for the first time performed under the stimulus of the perception of similar acts. This mental condition starts experimental activity, which tends to be somewhat like the apprehended movements. Now if the model act continues to be kept before the attention, because it is repeated, or because it possesses interest enough to be kept clearly in memory, or because of an effort of will, experimentation may continue until a fairly accurate reproduction is for the first time made by the child. This is persistent imitation. By it one learns to do what he has never done before. Imitation helps to initiate experiments, as well as to determine survival among them. (3) Consciousness may enter in to contrive such a combination or modification of

The imitative impulse as instigating experiments

acts over which one has already gained control as will conform to the model. Here the starting point is not the mere impulse to do something somewhat like what is perceived, even if one cannot imitate it exactly; but there is a consciousness of such impulses and of the acts to which they lead which directs the imitative process.

Imitation as consciously planned

We have already pointed out that it is likely that some acts are instinctively imitated The "imitative association" may be inborn It is hard to be certain of this, however, since as soon as these acts are performed as a result of any sort of stimulus, the conditions are present for the formation of the "imitative association." For example, chickens may run and hide long before they do these things as a result of perceiving others acting thus. Nevertheless, it is likely that this act is so fundamentally important as a means of self-preservation that it and the emotions that are excited in such an emergency can be roused imitatively as well as by the perception of a hawk, a fox, or some other dangerous foe. It is hard to understand how the "imitative associations" could be so well and so early established by individual experience as to enable them to produce such perfect terror and such similarity in the methods of protection. It would seem, therefore, almost certain that there is genuine instinctive imitation. Moreover, there is also imperfect instinctive imitation. It is likely that many centers in the brain are naturally in close connection with motor centers that control the movements likely to result in the sensations in which they are concerned. The auditory tract seems to be naturally connected with the motor centers controlling speech, so that the hearing of sound leads at once to the production of sound. Such inborn connections, although vague, may assist much toward correct imitation, causing the early responses to certain stimuli to come nearer a reproduction of these stimuli than could possibly be the case by mere random reactions.

The imitative association as inborn

Growth from unconscious to purposive imitation

Turning again to the classification of imitative acts, we can distinguish among acquired imitations such as are involuntary from such as are genuinely voluntary. Early imitation is, as we have seen, largely a matter of unthinking mechanical necessity. We imitate, on the one hand, because the "imitative associations" are formed, and, on the other, because our attention is constantly directed toward those supremely interesting things, the movements of others of our kind. The constant presence of models that can be imitated combines with the mechanism for converting the perception of them into mimicry. Soon, however, in intelligent beings both the fact and the advantages of imitation become apprehended At this stage persistent imitation becomes more in evidence. From a blind tendency that seems to represent a sort of feeling of the desirability of continuing experimentation until the model is reproduced, it becomes a purposeful effort to do what is seen to be a desirable thing. The awareness of the superior skill of others, and of the prejudice of society in favor of imitation, both assist the growth of voluntary imitation.

Voluntary imitation not common in the lower animals

It is not likely that the lower animals imitate voluntarily very much, if at all. Herein lies the reason for the theory[1] that they do not learn by imitation. They do not, at least to any extent, repeat the acts of others with the distinct idea of attaining the same results by so doing. If, for example, a monkey gets into a cage by opening a latch that it has observed another monkey or a man to manipulate, it may be simply imitating the act upon which its attention is fixed without any conscious intention of thereby effecting a certain desirable result. If, however, it selects the specific act that masters the situation from among others just as likely in themselves to provoke imitation, it would seem to display purposeful imitation. Such cases are described by Hobhouse.[2] This inves-

[1] Compare Thorndike, *Animal Intelligence.* [2] *Mind in Evolution.*

tigator makes the point that the ability to learn through imitation depends very largely upon the animal's power of attention. If it be able to attend closely enough to the acts of a companion to note what movements bring about the desirable result, it can learn by imitation. With most animals the attention wanders so quickly that they are unable to note the connection between a specific act and its consequences. They may imitate acts without reference to purposes, but, if their minds are bent on purposes, they cannot attend also to the acts by which these are attained. Instead of learning from its companion the trick of opening a gate, the typical dog simply associates this clever mate with the removal of the obstacle. It apprehends no way to get through except to seek the aid of the dog with the *open sesame*. Many children betray a similar lack of power to imitate purposively.

Lower animals imitate involuntarily

It is, however, a narrow interpretation to limit learning by imitation to voluntary imitation. To do so would be to neglect he important directive influence of imitation in emphasizing without one's knowing it appropriate adjustments, and in stimulating experiment toward these. Doubtless, lower animals imitate very little voluntarily, but mimicry plays, nevertheless, a very important part in helping them to acquire effective habits.

Growth from the imitation of simple acts to that of general plans

From the genetic point of view, another distinction is of the same importance as is that between involuntary and voluntary imitation. It is that between the imitation of simple acts and of general plans. At the one extreme, we have the mere repetition of sounds, gestures, or reflex or habitual activities, such as coughing, running, or hiding. At the other, we have a purpose and a general scheme for its realization adopted from others, but the specific methods by which it is carried out may vary widely. If, inspired by the success of some one in a certain profession, a young man chooses to fol-

low this career, he may be led to adopt an entirely different course in order to prepare therefor. He imitates, but only in the most general way. The adaptation of a plan, which is suggested by the example of others, to the resources, circumstances, and tastes of one's own life provides abundant opportunity for reasoning. Such activity begins early in the play life of the child in what is known as dramatic imitation.[1]

Imitation of general plans rarely found in lower animals

Just as the lower animals show very little purposeful imitation, so they are rarely found to imitate and adapt a plan. Hobhouse cites a very simple case illustrating the beginnings of such an activity. Food is placed on a high shelf, and attached thereto is a string which dangles down within reach. By pulling the string the experimenter secures the food for a dog. Later the dog gets down the food for himself by pulling the string with his teeth. The situation here is so simple, and the adaptation of the man's movement to the dog's resources so natural and inevitable that it lies quite within the range of brute thinking. It illustrates not only the inception of the imitation of plans, but also the beginning of purposeful imitation.

Summary

To sum up, we may say that imitation depends upon the existence of the "imitative association." This is an association between the sensory area concerned in the perception or thought of a movement and the motor area that controls this movement. Such associations may exist hereditarily, in which case we have instinctive or reflex imitation. Imperfect instinctive imitation may exist where the imitative associations are vague and indefinite instead of being specific. The imitative association may be formed only when the child himself makes the movement. Such associations tend to be established as a result of early reflex or random movements. Learning by imitation means (1) the fixation of some of these

[1] Compare Kirkpatrick, *Fundamentals of Child Study*, Ch. VIII.

associations by the repetitions suggested by the example of others, or (2) the experimentation to reproduce an observed act not yet under the control of the experimenter, or (3) imitative experimentation under the direction of reasoning.

From the genetic point of view, imitation begins as the spontaneous imitation of simple acts, and grows through the building up of the imitative associations and the growth of knowledge as to the advantages of imitation into voluntary imitation, on the one hand, and the imitation of plans, on the other. Voluntary imitation demands purpose and a certain power of persistent effort. It finds its beginning in persistent imitation. The imitation of plans involves reasoning to adapt one's resources to the plan he is copying. It is early illustrated in the dramatic imitations of children.

Section 37. *Psychical effects of imitation*

Imitation as compelling discrimination and reasoning

We have just seen that the growth of the imitative function involves enhanced power of discrimination, a sense of the superior efficiency of the movements of others, the growth of a purpose to copy them, and the rational power to adapt the aims and plans of others to the circumstances of one's own life. According to the functional view of mind, we discriminate only when it is necessary to do so in order to make appropriate reactions. The experience of imitation is full of blunders and failures. Accurate and successful imitation makes a heavy demand upon keen discrimination Again, one notes how much better he gets on when he happens to do as others do than when he simply follows his own devices. This advantage is so nearly uniform that it easily grips the attention, and enables the formation of a purpose to imitate. Such a purpose increases the amount of imitative activity, and hence puts greater burdens upon the powers of discrimination and of reasoning.

Imitation the basis of social feelings and insights

Thus imitation not only profits by mental development, but helps it on. As it is essentially a social activity, the feelings and insights to which this mental development leads are mainly social. Moreover, it may be said that the social consciousness that is fostered by imitation could scarcely find any other adequate nurse. We may group this consciousness under three heads: (1) community feeling and cognition; (2) consciousness of the social elements, — that is, of the self and of others as subjective entities, centers of consciousness; (3) consciousness of the social norms, or of the standards upon which social judgment and action are or should be based.

Basis of the psychical effects of imitation

The mental advances that imitation promotes are a result of (1) the motor experiences that it affords, (2) the problems with which it faces us, and (3) the attitudes that it leads us to take. Community feeling and cognition are largely an outcome of the first of these factors. We have such community consciousness when the members of a social group feel similarly, or perceive, imagine, or think about the same things. The common activity that results from imitation favors community feeling, because our activities determine our feelings. Here we may again invoke the James-Lange theory of the emotions, to which we have referred.[1] It will be noted that the bodily activities that are especially concerned in rousing emotions are the internal organic disturbances. These can, without doubt, be propagated by imitation. The frightened acts of a chicken or a sheep are quickly reproduced by their fellows, with resultant spread of fear. Such imitation may be called instinctive organic imitation, and it is, doubtless, the basis of the unreflective sympathy of social beings.

Community feeling due to instinctive organic imitation

Common feelings suggestive of common ideas

Imitation communicates feelings because the imitative acts are themselves the basis of the feelings they transmit. We act similarly, and hence feel similarly. It communicates ideas

[1] Compare § 11.

because these common feelings get associated with similar ideas and constitute a powerful agency to suggest them. To illustrate, a child imitates the acts of fear. Soon he feels frightened, and fear stimulates his imagination to picture out the possible source of danger. The definiteness of these images will depend upon the vigor of the imagination. Moreover, the other attendant circumstances, which are noted by perception, will contribute to determine the specific image that is held to be most likely to represent the danger. We have here a semi-logical process of hypothesis and verification, such as appears in perceptual control. However, the extraordinary effectiveness of the feelings of activity in controlling the attention must be kept in mind. If one sees a companion exhibiting fear, and begins to imitate him, it requires much reassuring experience to dispel the images of danger and to check the reactions that excite the emotion.

Common motor adjustments and sameness in the direction of attention

The vigorous emotions are not the only motor feelings that suggest common thoughts to imitating individuals. The general direction of attention and the tone of consciousness are largely determined by the sense of what we are doing. Motor adjustments settle the course that thought shall elect to take. Hence, when we imitate movements, we project thought into channels similar to those followed by our models. Merely to express one's self in speech and writing helps one to control the current of his thoughts, and that not merely because the sound or sight of the words fixes attention, but especially because the feelings of movement dominate it. Hence the imitation not only of the expressions of emotion, but of any sort of movement, contributes very materially to render thought uniform.

The community feelings and ideas that imitation spreads about find their function in further consequences to which they lead. As we have seen, the feelings and especially the ideas

Interaction of the thought and feeling of a group through expression and imitation

of the imitator will differ somewhat from those of the model. First of all, imitations are, of course, never exact reproductions. The imitation is characterized by the peculiarities of the individual who produces it. It is also determined by his special situation, which is always a little different from that of the model. Since the reactions differ, the feelings will differ. Moreover, the accompanying perceptions will differ, since imitated and imitator occupy somewhat different situations. Finally, the trend of thought is determined, not only by motor feelings and present perceptions, but also by past experience, which is likely to differ among the individuals of an imitating group. Now the feeling and the thought that ensue upon imitation are the stimuli upon which subsequent action will depend. Hence these later activities among the members of the imitating group will tend to differ more and more. On the other hand, since these individuals are continually observing and copying each other, there is a constant tendency for these variant streams of feeling and thought to return through expression and imitation toward a common character.

Resulting comprehensiveness and sanity of common judgment

We have here a sort of a social mind held together by the associative links of imitative activity, similarity in emotional and cognitive nature, and common circumstances and experience. On the other hand, the mental differences bring to bear upon the common action a variety of experiences, individual attitudes, and points of view, that all contribute somewhat to the resulting group activity. The interplay of thought and feeling among the individuals of an imitating group is somewhat like the reflective processes of a deliberating individual, in whom new considerations derived both from perception and from memory are continually appearing and determining the drift of mind toward judgment. There can be little doubt that, however extreme and unbalanced some of

its consequences may be, the social mind that imitations foster contributes, on the whole, comprehensiveness and sanity to the common action. This is especially in evidence when imitative activity takes the form of language.

Imitation as a source of the consciousness of self and others

The second important psychical advance to which imitation leads is the growth of self-consciousness and the consciousness of other minds. This phase of mental genesis has been exploited especially by Professor Baldwin.[1] It is, of course, peculiar to human beings, as no one of the lower animals can be supposed to be capable of the memory, the comparisons, and the distinctions that are necessary. The details of the process, called by Baldwin "the dialectic of personal growth," may be condensed as follows: —

Causes of interest in one's own body and in those of others

The child first establishes his physical orientation. He distinguishes his own body from other objects. His own body is peculiar, in that it yields sensations when objects come in contact with it, and yields pain when these contacts are too rough. Moreover, unlike other things, it is always present and is under the direct control of the child's impulses. But other objects are to be separated into classes. Some, the bodies of other animals, are especially interesting. They move, and moving objects are very attractive to the attention. Moreover, they move in ways unaccountable to the child, and are hence provocative of curiosity. The movements of persons possess the additional interest of contributing in the most marked way to the satisfaction of the child's desires, both social and individualistic. So far, however, mental analysis has not made use of the guidance of imitation, and the subjective worlds of self and of others have not been directly apprehended.

It has been seen, however, that all this interest in the acts of persons will render certain as much spontaneous imitation

[1] Compare the two volumes on *Mental Development*.

Imitation reveals (1) the subjective side of others and of self;

of them as the physical organization of the child will permit. Such imitations yield new motor feelings, new emotions, and suggest new ideas. Thus the child gets the "subjective" side of the acts of others. If he possesses adequate memory, he can project these new experiences back into the person whom he has imitated, or into any other person who may act similarly. To perform certain acts means to get experiences different from what one gets by merely observing them. Others who are acting are discovered to feel differently from the self which is perceiving their acts. They are having the same feelings as the self gets when it imitates these acts. Thus other minds get differentiated from the self.

(2) the self of agency;

The ejection of subjective selves, with their attendant feelings, emotions, and ideas, into the activities of others enables a sharp discrimination and definition of one's own self. Thus the sense of subjectivity, so fundamental to self-consciousness, is born and developed. But in connection with this subjective notion of the self, there develops another factor of fundamental importance. It is the sense of the power of the self to do and to think. The child recognizes that in imitating others it is doing those remarkable things for which they are especially interesting. What others have done for it, it comes to do for itself. It becomes aware of itself as a center of power hitherto regarded as foreign, if not mysterious. To the subjective self of feeling is added the self of agency.

(3) the value of effort or will;

The independence of the assistance of others that the child gains by imitating their acts when they do desirable things develops still further when the child comes to imitate difficult acts. Here simple imitation is replaced by persistent imitation. Under the pressure of a conviction that imitation is always possible and always an *open sesame* to desirable results, the child puts forth effort, and thus learns what is commonly called the force of his will. If he deliberately persists in the

face of discouragement, he may often gain results otherwise impossible. Thus the sense of agency expands from a feeling of power to do what others do to a sense of independence, and from thence to an awareness of the value of effort, of force of will.

(4) the motives of others.

The imitations of the child reveal to him not only how others feel, but also many results of their action which were not evident to mere observation. Many apparently capricious acts are seen to have a motive. Moreover, the point of view of the actor is in any case a more favorable one from which to apprehend the purpose of the act than is that of the observer. Thus the child penetrates through imitation not only into the inner feelings, the heart of his companions, but also into their motives. Human activity becomes suffused with intensity and significance, with emotion and purpose. Behind those bodies there are discovered minds, the contents of which soon become more mysteriously fascinating because they constitute a newly discovered country, with wealth the extent of which can only be vaguely imagined.

(5) the attitudes and standards of society

The discovery of new motives and attitudes to eject into the minds of others is particularly favored by imitating such conduct as centers about the treatment of companions. In reproducing what others do when they command, teach, cajole, manipulate, trick, criticise, and ridicule others, or when they are obedient or loyal or admiring or helpful or sympathetic, the child becomes aware of a group of motives and judgments that others are directing toward himself. He learns the presence of what Professor James calls the "social me." In taking certain attitudes toward others he learns how large a part such mental states have in determining his welfare. He becomes aware of social pressure in a new and profounder sense, — the force of that mass of opinion and feeling that constitutes his standing. He learns that a most important part of what he

The "social me"

is depends upon others and he begins to look to others to ascertain more clearly what he can expect and do.

Knowledge of the minds of others reveals (1) the self of memory;

Out of this tendency to look back upon himself from the standpoint of others the consciousness of the self of memory and the self of character are born to supplement the mere sense of subjectivity and of power. The experiences that are accepted as true memories are at first largely such as meet acceptance. The true, as distinguished from the imagined past, must stand the test of social criticism. Out of the judgments of others the child is led to construct the history of his life, his self of memory. But he does not continue to await the verdict of society before pronouncing on the validity of a memory. Indeed, he discovers himself to be part of that judging society. Moreover, he finds internal as well as external tests of truth. The peculiar familiarity that belongs to memories and the coherence with the general current of his past are criteria which may overbear the opinions of others. Our companions would make us admit that we have done things that we feel sure we have not done. We learn that the inner world of experience is after all a private history, that only we ourselves can hope to read aright.

(2) the self of character;

Especially are we convinced of this as we come more and more to realize our characters. The consciousness of one's character is at first a summation of the opinions of others. But we come to know that they may err in these judgments. They would make us feel as we do not feel, or have ideas, motives, powers that we know we do not possess. Introspection, provoked and guided by the awareness of objective attitudes toward the self, soon learns their inadequacy, their error, their injustice. Thus the sense of the private self, with its inner history, with its memories and its feelings, with its past and its ambitions, unsearchable by all save their possessor, comes to consciousness as representing the true character, the true self.

(3) the psychical world

The growth of the consciousness of personality, whether in self or others, means that community consciousness becomes objectified in a mysterious world of spirits that lies behind or beyond the objects of sense. These persons are seen to be fundamentally related to nearly all the practical emergencies of life. Their inner life becomes so absorbingly interesting as to reduce the physical world to a mere symbolism of the mind that lies behind. It becomes the mechanism for the expression, the spreading abroad, of certain phases of the inner life.

Imitation reveals the social norms

Thus through imitation there is developed a community consciousness, which is again differentiated into the inner life of personalities. Imitation controls the process of expansion in the mind of each individual, so that it proceeds along common lines and develops common concepts. This process of growth is governed by certain criteria, certain principles of selection or judgment. We may call these the social norms, and their discovery constitutes a third contribution of the imitative process to mental development. The simplest of these norms is that of the socially acceptable. By imitation the child comes to exert, as well as to feel, social pressure, and so to ascertain in his own person the motives, the principles, that lie behind it. If the child is not only to obey, but also to command, not only to be condemned or approved, but also to judge and punish or reward, he must get behind the merely socially acceptable to the conditions that determine social practice. Thus he arrives at notions of the customary, the authoritative, the appropriate, the right. He differentiates the interests of self from those of others, and discovers those universal social standards that are above both.

In his early conduct the standards of the child are uncritically taken in. But as experience accumulates, there comes the strife of motives, the conflict of inconsistent criteria de-

The strife of motives and the rise of independence

rived from different sources or even from the same source at different times. The child faces new situations in which these older principles find verification or confutation. He deliberates, and in the logical processes that which has been earlier passively absorbed is subjected to an inner selection. Thus eventually he reaches the notion of right, which, as distinguished from either the customary or the authoritative, seems to be the product of an inner self, a reason or conscience. Here we have that interplay of experience and reason, of the empirical and rational tests of truth, which was earlier referred to in connection with the evolution of judgment.

The standards referred to an inner origin

As we shall again take up these norms in connection with the social mechanism of imitation, we may here dismiss them with the remark that, even before they are subjected to rational criticism, they acquire a peculiar sense of having originated from within, because of the manner in which the imitative activity through which they are learned impresses the feelings. Coming through the active process, they seem like a revelation of immediate experience. And, indeed, this view is not false to the ultimate facts. For while social intercourse and imitation may be the medium through which we come to realize the feelings, ideas, and standards of others, it is evident that we must have the inherent power to feel and think and evaluate after the fashion of the models that we copy, or imitation would leave the inner life eventless. This is but a reiteration of the principle so frequently emphasized, that the conditions of life do not create the functions of the living, but rather select those that are suitable by eliminating the others. Imitation is a function that brings us into contact with the conditions of social life. It is primarily a selective activity, the special service of which is to encourage in the imitator the retention and cultivation of such thoughts and feelings as are peculiar to the mass of his fellows. It inducts us into the inner

life of other personality, by helping us to distinguish the experiences that are representative of such life.

Summary

We may sum up by saying that imitative activity is activity directed along lines most likely to prove an aid to effective mental development. It puts us in a position where discrimination is necessary, and what we thus distinguish is peculiarly important in reference to the practical emergencies of life. It affords a great opportunity for adaptive reasoning. It helps us to conceive purposes, by revealing the value of imitation, thus giving rise to the purpose to imitate. It teaches us the value of effort. It affords among the imitating individuals an interplay of feelings and emotions, ideas and motives that constitutes a social mind far more flexible and at the same time far more comprehensive and deliberative than the unaided mind of a single person. Through the feelings that it produces and the ideas that they suggest, it leads us to distinguish the social elements, the self and other selves, with their private subjective life of feeling, motive, ideals, character. From these insights we gradually build up a consciousness of the social norms, the customary, the authoritative, the appropriate, the right. All these criteria are transmuted by the experience of imitation, and especially by the aid of logical reorganization on the part of each individual, into standards of the inner subjective self.

Section 38. *Social mechanism of imitation*

In the last section we approached the subject of imitation from the point of view of the individual, of the subjective life. There remains to consider it from the standpoint of objective, social activity. The social mechanism of imitation is the essence of social heredity, and so the basic form of education.

Society as an interplay of imitations

The epoch-making writer on this subject is M. Tarde.[1] To him, society in the last analysis consists essentially of the interplay of imitations. Uniformity, law, reduces itself in the physical world to the repetitions of vibration, in the biological realm to those of heredity, and in the world of psychology to those of imitation. Forms of activity appearing in the beginnings of human history have been by countless generations imitatively reproduced, until they have come to play a part in the conduct of the civilized man of to-day. Models for imitation spread in all directions, like the waves from a point of disturbance in the water. Not only do they extend in space, but also in time, for what one does he himself imitates later, and ultimately incites another generation to reproduce. Self-imitation shows itself physically in habit, mentally in memory. In short, psychological continuity rests primarily upon the imitative process.

Imitation spreads in geometrical progression

Such, at a glance, is the conception of Tarde, and we must admit that it is striking, and that it affords at least an important aspect of truth. The fundamental phases of the activity of imitation Tarde analyzes as follows: First of all, each imitator becomes himself a center for the spread of the model. What one does a number imitate, and each of these, we may assume, will on the average be imitated by an equal number. Thus the model is spread abroad in geometrical progression. The inevitable consequence is that various models should come in conflict with each other. Any individual will find himself a member of different imitating groups, as it were. He will apprehend successively different activities, and the tendency to imitate the new will come in conflict with that to reproduce the old. Thus we have what Tarde calls *opposition*. But opposition does not mean the mere paralysis of the activities that come in conflict. Rather do they struggle, with the result

Opposition and adaptation

[1] *Les Lois de l'Imitation.*

that either the one or the other is victorious, or a compromise is effected. In any case, it may be said that the resolution of any such opposition tends to be in the direction of *adaptation*. Thus imitation becomes the parent, as it were, not only of continuity, but also of variation, and an agency fundamentally conservative proves a most fertile source of originality.

The conflict of models as a struggle to seize the attention. Settlement by ascendancy or by compromise

It is evident that the situation here described by Tarde corresponds to that in which ideational readjustment evolves. The factors which we have traced in that process we may again note in their objective aspect as we study the interplay of models for imitation. To begin with, there are two typical results of a struggle of models. First, there may be a wavering of attention to and fro among the patterns suggested by memory, with an ultimate ascendancy of one, and a sinking of the others into a more or less permanent oblivion. Second, these patterns may combine into new schemes of action, having some of the elements of each. It is likely that as a rule any conflict results in an activity that may be said to be predominantly the reproduction of one model, but not without influence from others. Ideation concludes in the victory of a certain plan, but the others are not quite banished. Instead, they remain to affect, wherever this is easy, the details of its execution.

Unconscious forces that control attention: (1) subjective influences, instinct, habit, and intensity of impressions;

In its earliest phase, the struggle of models is determined by forces of which the imitator is not clearly conscious. On the subjective side we note three such influences: instinct, habit, and the intensity of the impressions. One's nature may make it especially easy for him to imitate certain models. It is likely that the Indian finds it inherently more easy to copy his wild life than the ways of civilization. However this may be, it seems clear that children in the same environment instinctively prefer different models. So far as observation has gone, it is almost impossible to disentangle the preferences due to instinct from those dependent on habit. Undoubtedly,

as a rule, they combine. Children are led by early and constant association to form the habits of family and race. These are the activities to which one may suppose their hereditary nature predisposes them.

As against the forces of heredity and habit, a keen mental sensitivity operates to secure attention to variant models. The more alert the mind, the more intense a novel stimulus may become. Hence, as intelligence evolves, the possibility of breaking the grip of heredity and habit by new and striking models increases.

(2) objective influences, custom, and prestige. Control by intensity of impression and by prestige indicative of advancing intelligence

Corresponding to these subjective influences, we have the objective ones of custom and prestige. Custom reënforces by iteration the tendency of a model to seize attention and to become a habit. Variant models are submerged by the one prevailing type. On the other hand, prestige may lend these unusual patterns a force that enables them effectively to hold the attention. It is evident that with the growth of power of consciousness, the novel and the striking will become more clearly differ ntiated from the customary, and it will become increasingly possible for the individual to feel the influence of prestige. Preferential imitation is a function of developing intelligence. At first, however, prestige is not the result of the possession on the part of the model of attributes which are clearly recognized as good reasons for preferential imitation. It depends upon force of manner or such practical success in the contests of social life as compels attention. The conqueror must be observed, and a striking personality is part of his equipment. One imitates unreflectively the person with prestige, yet there is, doubtless, a general gain from such activity. If prestige goes with success, it makes likely the imitation of that which produced the success. If it is an attribute of leadership, it makes for that coöperation with the leader by which society is made strong.

The control of attention and of imitation by prestige is the immediate forerunner of reflective, critical imitation. As we have seen, it is dependent upon considerable intelligence, and it also opens an opportunity for such variation as is apt to force upon the alert mind the value or lack of value of imitation. As prestige wars with custom, so it wars with itself. Many compete for recognition, for leadership; and while the struggle is at first not settled by an appeal to critical judgment as to the relative excellence of rival aspirants, nevertheless, such comparisons are instituted, and with the progress of time they become more constant and thoroughgoing. The judgment is likely first to attack the problem of the general effectiveness of an individual. When this is once established, prestige follows, and it extends to all the acts of the person who possesses it. At this stage there is no tendency to question each of these acts on its own merit as a desirable model for imitation.

Conflict among models with prestige.

Rise of judgment

The appearance of consciousness as to the value of imitation and critical judgment in reference to the models that are followed means the formulation as standards of judgment of the various factors that have proved effective in the control of unreflective imitation. Thus custom becomes a recognized justification for certain models, while the natural or supposed supernatural abilities of certain individuals are held to give them supreme reliability as patterns for action or thought. The idea of the authoritative appears. The authoritative, whether it be custom or the practice of an authoritative individual, gains, because it is consciously recognized as a standard, additional prestige, or compelling force.

Rise of consciously approved prestige or authority

The reflective determination of the authoritative means the appearance in society of a conscious endeavor to sustain and to enforce its control. The authoritative is sanctioned; that is, a penalty is inflicted upon those who do not conform. This sanction is the natural method by which society compels

Support of authority by sanctions

the individual to obey customs that are in the interest of the established order. But it is not limited to this use. It is applied indiscriminately to practices that are not of any critical importance to society. The sanction of the laws of nature, which bring to grief all who violate them, are not distinguished from the sanctions wielded by man to render his commands authoritative. Indeed, since nature is at first regarded as under the control of supernatural wills, there is no recognition of an essential distinction between the authority of natural and that of human law. It is not seen that one is inevitable, and the other capable of being changed as man sees fit.

Natural not distinguished from artificial sanctions

The sanctions that society employs to strengthen or create authority may be roughly divided into social, religious, and legal. The social sanction consists of the neglect, the ridicule, the abuse, the ostracism, the indiscriminate injury to person and property that society tends to inflict on those who depart from its ways. The religious sanction consists in that disfavor which the supernatural powers are supposed to visit upon those who fail to conform to their customs. When society through an established machinery of justice punishes those who violate enacted law, we have the legal sanction.

Social, religious, and legal sanctions

Of all these the social sanction is, on the whole, least a result of deliberation, and the legal sanction most so. Indeed, there is probably among men a sort of instinct for conformity to custom, which displays itself negatively in the scorn and hatred of the innovator. Such an instinct would be closely allied to the æsthetic sense, which early appears in a fondness for the conventional. Thus æsthetic pleasure is largely the ease and sense of harmony that one feels in observing the familiar order of things. The instinct for the conventional is, of course, a powerful agency to reënforce the natural effect upon attention and imitation of the constant repetitions of custom. It manifests itself in the social sanctions, and in that form becomes

Instinctive basis of the social sanction

an object of conscious fear on the part of any who are tempted to fall away from prevailing practice.

Natural evolution of the religious sanction

The religious sanction, like the social one, operates to produce conformity and social solidarity. We have earlier [1] discussed the value of religious belief as an agency for social control. The religious sanctions evolve naturally, and unreflectively they become attached to such conduct as makes for social efficiency. In the struggle for existence the group with whom religion is a most effective agent for coöperation will, as a rule, survive. Men realize the greater prosperity that goes with certain types of religion, and naturally attribute it to the special favor of the gods toward such as conform to their will, rather than to the increased efficiency that springs from this obedience.

The legal sanction more evident than the others. It becomes recognized as artificial

The legal sanction is superior to the social and religious sanctions in possessing the advantage of statement in the form of positive law, together with that of established machinery for its enforcement. Indeed, the addition of these two factors converts social and religious sanctions into legal ones. Custom and religion tend to evolve into legalism. The explicitness of positive law and of the method of its enforcement brings directly before intelligence the nature and purpose of its sanctions, and the fact that they can be wielded by the human will in the interest of any social practice. The authoritativeness of custom and of religious practice are not felt to be a result of human intention, but rather of some law superior to human judgment. In them mankind simply adds his sanction to the inevitable. But when legal sanctions appear, authority is traced to its source in human will, and judgment is evoked in order that the power that resides in control of the sanctions may be used most advantageously, either for the social group in general, or at any rate for its leaders. Thus legalism means

[1] Compare § 14.

the evolution of authoritativeness into the stage of clearly conscious control.

Rise of conscious tyranny through the control of sanctions

This intelligent comprehension of the meaning of authority involves two new attitudes. In the first place, men come to recognize clearly the difference between the inevitable laws of Nature or of God, which they need to know but cannot control, and those customs and laws that are subject to human will, and can, therefore, be manipulated. In the second place, they recognize the remarkable value of control over the sanctions as an agency for exploitation. The evolution of leadership and of privileged classes is in no small measure facilitated by the growth of sanctions, and since such individuals or groups possess as a rule superior intelligence, they quickly learn the source of their power and come to exercise it in the interest of self or of class. Thus intellectual growth favors cunning, and the rule of priest or aristocrat evolves into tyranny.

The struggle for the control of sanctions. Appeal to reason

This sort of a condition contains within itself, however, the seeds of its own destruction. For it means such a struggle for control, such variety of motive among those who control, and such a critical discussion of the justification of law, as inevitably leads to a general knowledge on the part of all classes, the exploited as well as those who exploit, of the significance of the edicts of human authority. Warring individuals or classes struggle for dominance in the state, and with their varying claims and laws force upon the attention the fact that law depends upon human will, and that it may be wielded in the interest not of society, but rather of the men who make it. Moreover, many leaders aim to justify their rule by showing that their laws conform to the higher laws of Nature and of God, or, what is taken to mean the same thing, the welfare of their people. Thus, in endeavoring to show that with them the two types of law conform, they emphasize the distinction

between them. Many leaders earnestly desire to rule that they may make positive law in the interest of general welfare, or what they regard as the will of God. The attack upon the tyrant often comes from members of his own class, or even from those who are favored by tyranny. Thus the struggle of contending forces for the coveted control of the sanctions leads to a mass of conflicting views. Human reason flounders among the reasons that are offered to support existing or proposed laws, or the rule of this or that man or group of men. Each individual sees the social situation partly from the point of view of his antecedents and his culture, partly from that of his special interests, and partly from that of a fairly general survey of all the conflicting arguments for and against the established order. The priest or the lawgiver, even though he may be dealing with religious faith or legal enactment according to what he thinks is the righteousness of God or the principles of absolute justice, is apt to overemphasize his specialty. The one offers to man a form of worship that arrogates to itself supremacy over all other interests, the other turns law into a mechanism, not so much for improving the welfare of society as for enhancing the majesty of law itself. Thus each in all sincerity worshiping his God or his law takes an attitude that a critic may regard as an hypocritical mask to cloak the service of self. Meanwhile the governed and exploited multitude, by nature and training submissive, partly accept the offered justification of their government and partly yield obedience to what they regard as an inevitable exploitation.

Replacement of the customary by the right

The goal of all this interplay of opinion is the authority of truth. The truly proper is contrasted with the customary, and men seek that which taste must universally approve. The truly sacred is contrasted with the traditional religious worship, or with that of this or that cult. The conception of absolute principles of justice behind any established code

appears to inspire the reformer. Thus the sanctions of man's will are shifted about and fitted to that which his judgment declares to have the authority of reason and experience. One may wonder what need there is of human sanctions, if they are made to enforce that which itself yields to man his highest welfare. However, there remains the need of coöperation and of universal adherence to that which makes for the common ends. Since society contains those who lack intelligence, it must needs constrain them by man-made sanctions to do the wise. Since it contains those who lack conscience, it is compelled to coerce them into conduct that benefits rather than injures their fellows.

Summary

In résumé, the social mechanism of imitation resolves itself into the spread of models in geometrical progression, their interference and opposition, and, finally, adaptation, or the resolution of struggle. Thus the individual, in being the center of an unique group of lines of imitation, becomes a variant in education, just as he is a variant in heredity because of diverse strains of ancestry. A struggle of models may be concluded by the victory of one, or by compromise. The process is one that conforms to the conditions of ideational readjustment. The principles of selection are at first unconsciously operative. They take, from the subjective point of view, the form of hereditary preference, habit, and sensitivity to the new and unusual. The latter factor may, when it is keen, overbear the two former ones in control over attention and imitation. Objectively, the selective forces in imitation are custom and prestige. The appreciation of prestige involves keen sensitivity and alertness and considerable intelligence. Through them prestige can overwhelm custom. Since prestige involves intelligence, its causes are apt to be noted. Their recognition converts prestige into authority, and enhances its potency. Moreover, the consciousness of authority leads men to sanction it, or to

punish those who depart from it. The sanctions are social, religious, and legal. The social sanctions are least reflective, being largely a matter of mere instinct to attack the unconventional. The legal sanctions are most reflective, and lead to a recognition of the power men have of creating the authoritative by applying the sanctions. The utilization of this power for exploitation or social betterment leads to conflict and a gradual struggle of society toward law which shall conform to the truth and make for general human welfare. Thus the final authority is seen to rest in reason working with the evidence of practice as to the methods of dealing with nature and organizing society that are most effective for attaining the ends of human life.

Section 39. *Imitation in the history of education*

Growth of progressiveness in the selection of models

The evolution of the selective forces that determine the conflicts of imitation proceeds from heredity and habit to intensity of the stimulus, from custom to prestige and authority, and from the social, religious, and legal sanctions to those of natural law and common welfare as evident to scientific judgment. The entire movement means advance from conservatism to progressiveness and rationality. The study of this movement in the actual history of education reveals several factors that help in the interpretation of the process of imitation in the typical education of to-day.

Authority as a check to the disintegrating effects of growing intelligence

The development of adaptability is everywhere throughout evolution beset by such conservative checks as are necessary to safeguard the species or the society. The rise of intelligence threatens society with individualism, but the sanctions of authority, the tyranny of institutional life, prevent anarchy by suppressing originality and variation until the race has accumulated adequate experience and acquired a critical sense,

Conservatism of early education

such as enables genuine self-government. Early education is of necessity intensely conservative, because any other type would weaken social solidarity, and hence threaten social efficiency.

Resulting social selection of the docile and those fond of form

This conservatism involves a social selection of men on the basis of docility, on the one hand, and fondness for form, on the other. Docility means imitativeness and submissiveness. It means the capacity to learn from others, which in turn involves such intellectual power as makes possible the comprehension of what they do and think, and the physical and mental aptitude to repeat their performances. It also means receptivity, or the willingness to place one's self in an attitude of interested attention to others, and that yielding disposition which interposes few obstacles in the way of the imitative tendency set in motion by such attention. The struggle to conquer, that prevails in pre-civilized conditions, is replaced more and more by a struggle to conform, for society offers its rewards to those who excel in the latter contest.

Fondness for form means a love of imitation, custom, convention for its own sake, or for the sake of its æsthetic appeal. As has been suggested, it is even possible that the æsthetic sense is in part, at least, a product of the fondness for form that early civilization finds so advantageous.[1] However this may be, it is certain that society is made more conservative and secure by the existence of a devotion not merely to the spirit, but also to the letter of the law and the precedent.

Early education as largely social training

In addition to its conservatism, the conscious public education of early civilization is also, as a rule, confined largely to social training. This subject was treated in an earlier section.[2] Here we may reiterate the principle that society finds the training that makes for social solidarity and social efficiency so valuable both for the community and the individual that all

[1] Compare § 38.

[2] Compare § 14.

energy is bent toward making it effective. Hence, early education begins with a curriculum of social customs, ethics, and religion, which expands into literature and art, theology and philosophy, and finally into science for its own sake rather than for its practical uses.

Internal forces making for progress: (1) imitativeness;

The forces that lead away from mere conservatism and devotion to social convention may be classified into two groups: the internal and the external. Within any society, no matter how conservative it may be, there are agencies making for an ultimate break with tradition and custom. First of all, the very quality of docility that helps so effectively the growth of uniformity and conservatism, when the conditions are such that all variant standards are suppressed, becomes under different circumstances a basis for swift change and, indeed, revolution. Receptivity, imitativeness, renders one not only susceptible to customary influences, but also to any new suggestions that may appear. Thus originality is itself, as we have seen, often a product of the imitation that takes in and reproduces a number of ideas or forms of action, and from these develops new plans and methods. In placing a selection value upon docility that it may protect itself against revolution, society is only preparing the way for more rapid modification, when once the force of those sanctions that make for uniformity grows less. When models are many and various, an imitating society is a progressive one. The achievements of the Japanese are a remarkable illustration of this fact.

(2) the inertia of growth

Again, no society is able to preserve itself in exactly that position for which the customs fostered by conservatism are suited. Conservatism, like heredity and habit, prevents an adaptation from being hastily modified or eliminated. But the habits or adaptations of society, like those of the individual, are illustrations of that principle of the inertia of growth which has been earlier discussed. The progress of specialized growth

that creates the custom does not cease when it is formed. The forces that give rise to aristocracies turn them into oligarchies. Religion ceases to content itself with that strength which enables it to preserve order and to develop humanity. It endeavors to terrorize in the interest of a spiritual life at variance with human conditions. Law grows into a strength that enables it to maintain justice, and from thence into further strength that involves tyranny. Thus internal forces that produce adaptation continue to operate after adjustment is gained and ultimately result in lack of adaptation. Society outgrows its institutions, and the very endeavor to maintain them only renders the ultimate disparity between the function and the mechanisms, the need and the method of meeting it, more apparent. In such an unstable condition, slight influences often suffice to render men conscious of the maladjustment, and to rouse an active demand for revolution.

External forces usually the occasion for advance

Thus it is that internal forces operative in conservative civilizations pave the way for change by creating characteristics and conditions that make such transformation all the more rapid and eager when once alien ideas and customs find an entrance. It is these external agencies, however, that historically have afforded the occasion for revolution and progress. Early civilization seeks seclusion. It hides itself behind deserts, and mountains, and bodies of water, and, when these fail, it may try to construct artificial barriers, like the Chinese wall. In such security the sanctions of authority get an opportunity to produce an extraordinary amount of homogeneity. When, however, the course of history brings foreigners across the seas or over the mountains and waste places, when the barriers are broken down, then these sanctions are valueless unless the system they maintain proves effective in expelling the invader.

But even wandering nations do not at first come into suffi-

ciently close contact with those whom they meet to render imitation on a large scale operative. It is not mere physical proximity, but rather the form of social intercourse which prevails that determines the extent to which peoples absorb ideas and customs from each other. Among the most important of these types of social intercourse are (1) war, conquest, and government; (2) commerce and colonization; (3) travel; and (4) study of foreign culture.

Types of external contact illustrating the growth of interest in the foreign

The wars of early mankind are usually wars of extermination. Yet, in spite of this, they bring about a keen attention to such devices as are employed by adversaries in combat. As Tarde points out, such methods and instrumentalities of war as are effective are speedily copied whenever this is possible. War converts indifferent observation into an attentive interest in at least one important aspect of the life and behavior of foreign peoples. Such interest and attention is broadened when wars of extermination are replaced by wars of conquest. To enslave a people, or to make them pay tribute, requires far more knowledge of their customs and characteristics than simply to annihilate them. Again, when these forms of exploitation are replaced by more enlightened government under a power that endeavors to establish an universal peace like the *Pax Romana*, and to insure the good will of its provinces by granting them a share in the government, indeed, by making their people citizens, recruiting armies from them, opening to them offices, and granting them self-government, — when these measures appear, then the nations involved are brought into intimate intercourse and exchange points of view and the practices of peace as well as those of war.

(1) War, conquest, and government;

In a general way, commerce and the colonization by which it is extended and fostered constitute a step in advance of war and conquest so far as educational influence is concerned. For here there is a study of supply and demand, and the tastes

(2) commerce and colonization;

and resources upon which they are based. The advantages that spring from trade lead to a more extensive exploration of the world, and a more intensive study of the desires and capacities of different races of men than do those of conquest. In general, the development of trade is the most important stimulus to world conquest and government.

(3) travel; If we exclude from travel the search for the necessities of life, or for people to conquer or plunder, or with whom to trade, it is unknown to primitive men, and even to races well advanced in civilization. It means an enormous advance in attentive survey of the inner and outer life of foreign peoples. For the genuine traveler studies others not merely to barter with them, but because their differences are in themselves found curious and interesting. From Herodotus, unique in his generation, to the spirit of pilgrimage that survived the Crusades means a long step in the growth of interest in strange people and places. And an equally extensive advance is involved in attaining to the love of "globe-trotting" current in the modern world.

(4) study of foreign culture by the school Finally, men come to realize that foreign people are interesting, not merely because their ways are strange and curious, but because these may be better than those in vogue at home. The earliest important example of a conscious recognition of such superiority, and a deliberate adoption of another culture, is to be found in the Roman imitation of the Greeks. "Captive Greece took captive her rude conqueror" because of the manifest superiority of her art, her literature, and her philosophy. So, too, the Renaissance was captivated by the culture of antiquity and sought, not merely in another race, but in a vanished civilization, the customs and ideals that it would follow. Such imitation was merely that of the cultivated life of an aristocracy. The cultivated class is invariably the first to rise to the cosmopolitan attitude of borrowing from

others whatever seems best and, indeed, of looking elsewhere for the best. However, long before mankind set itself consciously to the task of finding additions to its philosophy, or science, or literature, or art, or institutional life among foreign peoples, a vague sense of the resourcefulness of the stranger became current. It is a common tradition that traces new developments in thought or institutional life to a wise man who has sojourned in a distant land, — a Lycurgus or a Pythagoras. The attitude back of such ideas ascribes to other nations strange arts, magic, the power to achieve those desirable things that have so far baffled the abilities of the race.

The culture of the reason and the study of the foreign

The spirit of this superstition is rationalized in modern life and education, when all study and research involves material drawn from all people who are judged to have achieved standard results in the given field, and when no important enterprise is undertaken without a careful survey of the most successful methods, in so far as these are available for inspection. Thus each new departure is a focal point for lines of imitation often world-wide in origin. Such a focalization of divergent material is the first step in the method of the school or the study that aims to cultivate the reason. Applications of this conception are found in the methods of development and of discussion in teaching, in the formal step of comparison, and in the reference work and comparative methods used in all subjects.

Habit-making and rationalizing phases of school work

The work of the modern school seems, from the standpoint of imitation, to be divided into two factors. The one consists of standardized material capable of being applied somewhat mechanically in the prevailing environment. Such material is presented without subjecting the pupil to variant models. The teaching environment becomes in reference to it the uniform environment of mere recapitulatory education. The other factor consists of the ideas, the principles, the habits that need constant adaptation to new conditions. Such mate-

rial should be presented with the widest diversity of point of view and practice, that the way may be opened for genuine opposition and adaptation.

Summary

The history of education, then, reveals a transition from isolated, conservative civilizations, where all models are reduced as far as possible to uniformity, to civilizations that encourage contact with others, and a persistent attempt to search far and wide for the best models in thought and action. In the conservative stage the forces of selection favor the development of imitativeness and receptivity. Hence it happens that when such a people has so far outgrown its institutions that change becomes inevitable, or when the exigencies of war force a contact with foreign races, it has evolved a character that enables it to absorb quickly from others whatever may there be found. The intercourse of peoples develops through the stages of war, conquest, and government; commerce and colonization; travel; and study of foreign culture. The last two have come to be definitely recognized as essentially educative. The modern progressive school aims, in so far as it transmits such standardized material as can be applied without thought, to present only uniform models, but, in so far as it aims at readjustment and power of adaptation, it strives to make of itself a meeting place for widely divergent lines of imitation.

CHAPTER XII

LANGUAGE

Section 40. *Oral language and the development of thought*

Interdependence of reason and language

Of all the results of imitation, articulate language is that which is most closely identified with the genesis and the functioning of reason. So closely allied are the rational and the linguistic forms that the Greeks employed one term, *logos*, for both word and reason, and Max Müller places on the title page of his book on the *Science of Thought* the expression "No reason without language, no language without reason."

Its basis in the association of word and concept

The inseparability of reason and language that is here asserted is based on the relation between the word and the concept. We have already seen that the concept is fundamental in reasoning, because through it alone are we able deliberately to adapt old measures to new uses.[1] The concept is experience in that form which is most usable in the analysis, the diagnosis of novel situations. That the word is a most important auxiliary in enabling us to attain and to use the general idea can scarcely be denied. The Nominalism that would assert that the concept is "speech and nothing more" has passed away, yet psychologists have agreed in a newer Nominalism, to which Locke may be said to have led the way. According to this, although it is admitted with the Conceptualist that the general idea does exist in the mind in some sense, at any rate, apart from the particulars in which it inheres, neverthe-

[1] Compare § 30.

less, without the aid of words the process of abstraction would be practically impossible.

Three ways in which language assists thinking

If we were to endeavor to formulate the ways in which language fosters the development of conscious learning, we might distinguish the following: (1) language in the form of articulate speech compels constant reasoning, by forcing analysis of new situations into familiar concepts in order that they may be communicated; (2) the word increases enormously the power of the mind to remember, and hence to deal effectively with the concept; (3) language brings social consciousness and social heredity to bear upon the mind of the individual.

(1) Language in its higher forms as compelling reasoning

(1) The need for expression is one of the most fundamental in human life. But one does not go very far in communication before he encounters the necessity of reasoning in order to make clear to others what he wishes to express. The transition from the expressive cries of the brute or the babe to the articulate speech of the child means, from the mental point of view, the passage from instinct and simple association to genuine reasoning. Expressive cries indicate primarily only feelings and desires. Indirectly they may communicate perceptions and ideas. If a peculiar emotion can arise only in a certain sort of a situation, then the cry that expresses the emotion carries the idea of the associated circumstances. Such a notion must of necessity be vague until it is cleared up by direct observation of these circumstances on the part of the individuals who hear the cry. The expression functions in arousing feelings. These in turn provoke vigorous responses useful to one or both of the communicating animals or to the species. The specific character of these responses is determined largely by data revealed by further observations on the part of the individual who makes the movements.

Meanings conveyed by expressive cries

Articulate, or jointed, speech, on the contrary, appeals primarily to cognition. It consists of words, each of which

without exception indicates a more or less generalized group of elements in experience, *i.e.*, a concept. Communication is effected by analyzing a situation into such general elements as can be indicated by words. These words are then spoken, and the ideas that they suggest are in turn synthesized by the hearer, who thus arrives at a representation of the original concrete experience of the speaker. Feeling and action follow the cognitive reproduction of the experience. Thus the mental process in attending to articulate speech reverses that provoked by the expressive cry. The latter hurries immediately to the goal of communication, which is that of stirring up vigorous activity. It leaves to the actor the problem of determining by his own observations and inferences the detailed character of this activity. It calls for help, but trusts to the rescuer to discover what help means and how it may best be given. On the other hand, articulate speech proceeds more deliberately to create a cognitive state so clear and detailed that it enables the hearer without so much additional investigation to get the desired feelings and initiate the appropriate responses.

Meanings conveyed by articulate speech

It is evident that the expressive cry is limited to the communication of a few simple wants. It cannot transmit these with any delicacy of distinction. For this it is compelled to rely on secondary observations and inferences from accessory circumstances. The expressive cry leaves communication largely dependent on the enterprise and intelligence of the hearer. It is incapable of expressing the inner life with any detail. The development of articulate speech means the growth of a vocabulary that translates all that the expressive cry leaves to gesture, to observation, and to inference into the symbolism of words. Beginning with a few words, which are sometimes called "sentence words," and which seem more nearly akin to interjections or verbs in the imperative than to any other part of speech, the vocabulary of the child or of the race ex-

Genesis of articulate speech in the child

pands, because of the failure of these to express clearly new situations to which they are applied. A new demand upon its powers of expression the child meets by an old word that seems most nearly to fit. The failure of this word to communicate successfully leads to the invention of modifying words to adapt it to this special case. Hence we have the rudiments of the sentence. Instead of seeking a new word for each new concrete situation, the child finds a word to express that abstract phase of it which is different from cases where a mastered word applies. Thus the endeavor to communicate leads immediately to imperfect generalizations, and to correction of these through a process of analysis and abstraction. In order to express these new distinctions, new words appear. Ultimately, the instinctive expressions and those absorbed unreflectively by imitation come to be supplemented by words for which the child sets himself consciously in search.

Coincident rise of rationality

It is plain that with the development of articulate speech the child comes more and more to take rational attitudes. He comes to realize the need of understanding others or of being himself understood by them. When he wishes to communicate something new, he is aware of the necessity of reducing it to factors for which he possesses symbols. These symbols must be standard ones; *i.e.*, such as are commonly used to express the factors to which he applies them. When put together, they must create a synthesis of thought which others will be capable of grasping. The demand for symbols and devices of phraseology is a summons upon his resources. The demand for intelligibility in wording and in sentence construction is a stimulus to judgment. The language situation is a continual challenge upon both these powers, and it is under its influence that purposive thinking is, for the most part, brought into existence and developed to a high degree of excellence.

As the child's power of expression increases, his sense of that which can be accomplished through it becomes more pervading. The natural tendency is strengthened into an absorbing habit, behind which there lies not only the social instincts, the desire for sympathy and for approbation, the love of social intercourse and of social service, but also the clear awareness of the enormous value of social agencies as a means of furthering almost any individual purpose. Language rapidly develops into one of the leading, if not, indeed, the leading activity of life. Power of getting on in a social environment is very closely dependent upon power of expression through which one influences others, through which one gets into contact with society and makes it work his will.

Growth of compelling interest in communication

So strong is this interest in language that men come to talk for the sake of talking. Articulate speech, not limited to the expression of a few vital situations where the need for action is immediate and imperative, becomes more and more concerned with the communication of ideas to be used in future deliberation, or to enhance the interest of life in a highly social community. The worlds of imagination, of reflection, of make-believe find new interest because supported by the social interplay that language makes possible. Men notice more the descriptive characteristics of things. A very large part of the qualities that we observe in our surroundings have very little if any significance except that through noting them description can be made more effective. Through language we are elevated into that social, psychical world, into that world of mind behind the phenomena of sense, which straightway becomes the vitally interesting, the genuinely real world, a world upon which all the activities are more and more brought to bear.

(2) The use of language is not only the occasion for reasoning, but it also does much to sustain that process by enabling

(2) Language as an aid to memory, (*a*) in grasping and retaining sensory distinctions;

us to seize by the attention and to hold in memory the concepts which it employs. In the mere matter of discriminating qualities of sense the name is a valuable help. Professor Judd [1] mentions an interesting experiment, testing the power to discriminate different shades of gray. Ordinarily, only about five such shades can be distinguished with certainty. If, however, one attaches a name or a number to intervening shades, it is found that with a little practice the number of distinctions that can readily be identified is much increased. The word constitutes a reaction that cannot be correctly performed without holding in memory the quality to which it applies. Thus a motive is furnished for distinguishing and remembering this quality. Moreover, distinctions are better remembered by being anchored, as it were, to a concrete and clearly apprehended image, — that of the word. This association tends to float an otherwise vaguely conceived element away from the similars that are confused with it. The word grips fast the distinction, and enables it to be held before attention until it produces a sufficiently intense impression to be clearly retained, and until it is associated well enough with its name to call that up when it appears and, indeed, to be itself recalled into consciousness by the mention of the name. Thus the word helps the memory, first, in the task of distinguishing and identifying the object to which it applies, and second, in that of calling to mind the image or concept of this object.

(*b*) in forming and retaining concepts

When we come to deal with concepts that are non-sensuous and represent a great number of relations, we find that the word becomes practically indispensable. In the midst of an ever shifting group of qualities, the word remains the sole fairly constant sensuous element. To take, as an example, the concept of a person; if one thinks of the extent of the changes

[1] *Psychology*, p. 261.

that take place while an individual grows from infancy to maturity, one realizes how dependent upon the name is the idea of the continuity involved. The tenuous thread of that set of relationships which we call the personality could scarcely be held in mind in the midst of all the fluctuations of appearance, of powers, and even of qualities of character, were it not for the help of the image of that word that has throughout the years remained the one sensuous thing invariably attached to it. Our other reactions toward the individual have all changed superficially or profoundly. And if the name helps in distinguishing and in holding in memory the notion of a person, much more important is it in seizing firmly class concepts, such as that of *horse*, or such abstractions as *equality* or *nothing*, where the sensuous images seem to have lost all value as a means of identification. It is the importance of this function of the word that led the Nominalist to maintain that its image is the only mental representative of the abstract universal element in experience. And, indeed, there would be no difficulty in establishing the existence of imageless thought,[1] were it not for the almost or quite constant presence in such processes of the reverberating image of the words by which the distinctions involved are wont to be seized by the mind.

The word simply a tool but indispensable to higher thought

On the other hand, no mistake could be more fundamental than that of confusing the word with the concept. The word is simply a tool by which the memory is able to hold its concepts firmly enough to define them, and to deal with them as distinct elements. This function is certainly important enough. If the concepts were not thus preserved by memory, it would be impossible to utilize them in ideational readjustment. The resources of the mind would be limited to naïve

[1] Compare Woodworth, "The Consciousness of Relation," *Essays Philosophical and Psychological* in honor of William James.

perception and imagination. The evolution of fertility of thought would be checked before it had attained that degree which makes possible reflectiveness. Hence, judgment could not arise to replace mere habit or feeling as a basis for decision. For judgment rests, as we have seen, on alternative courses clearly distinguished, on the sense that one can determine which is most reliable and which he will choose to follow, and, finally, on the presence of clearly conceived criteria. In short, ideational readjustment cannot advance beyond its rudimentary stages except by a system of concepts which can be held in memory only by the aid of language.

(3) In a sense, this function of assisting memory is the most fundamental of all the uses of language in connection with the development of thought. It is the gain in resources which comes from the strengthening of memory that enables the language interest to grow into such an absorbing one, and hence to make such an appeal to the reason. Moreover, the acquisition of these resources constitutes the act of taking possession of one's social heredity. The distinctions that we must seize in order to communicate are those which are common to society, and to learn them means to bring the mind into conformity with the experience of the race.

(3) Language as the portal to the social mind and social heredity

Here we come to the third and most evident of the uses of language. Speech breaks down the barriers between mind and mind, and extends the consciousness of the individual to cover, in some sort at least, the social consciousness of his time. Moreover, since this social mind is constructed out of the past, one's thoughts become part of that stream of experience which constitutes social heredity. He receives his spiritual inheritance through his mother tongue.

All this is commonplace, and it is unnecessary to enlarge upon the enormous modification and gain that falls to the share of the individual in this process. It should be noted,

however, that language represents the climax of imitation. Whatever was said of the latter process applies, therefore, to its specialized form. If imitation gives community action, feeling, and thought, language especially fosters coöperation and common consciousness. When we trace the consciousness of the social elements and of the social norms to imitation,[1] we should remember that without taking the form of language it could not lead to this result. Moreover, like imitation, language cannot be regarded as directly increasing the resources of the individual. What it does is to guide thought. It is a selective agency. In the process of developing the powers and accumulating valuable ideas, it is of the greatest importance that experimentation should be cut short. This is what imitation does. It furnishes as a rule only tested and approved models. The sanctions of imitation bring their aid to the elimination of all experiments, whether in thought or action, that do not copy these desirable methods. Instead of floundering and, perhaps, sinking in a bog of blind trial and error, the body is led to effective control and the mind to accurate thought by following the selected path of its predecessors.

Language the highest phase of imitation and, in consequence, a selective agency

Indirectly, this course results in an enormous gain of resources. Although words add nothing to the elements of our experience, they facilitate to such a degree its retention, analysis, and organization that we are enabled to amass a mental capital which transforms us into a new type of being. Language offers a path by which the individual is directed swiftly toward insights that the race has reached only after an incredible amount of wandering and toil. It is not merely that we are led through language to dwell upon especially available experience and to let the rest go. This selected experience has the additional qualities of being fundamental

Resulting gain in resources

[1] Compare § 37.

and conceptual. Hence it can be utilized in the greatest variety of new combinations, and it covers those relations by which experience is held in great systems. The formation of new systems and the tenacity of the memory for the systematic involve positive and extraordinary gain in mental content. For example, it is through language that we are enabled to construct the ideas of self and of others. In connection with the concept of self we build up a past. The concept of other selves extends this point into the realm of history. Thus the world of experience, past and future, is built up out of the simple experience of an individual life. It is differentiated into the world of personalities, that most interesting and absorbing of all the interests of men.

Summary

In résumé, we may note that language aids in the development of thought by forcing us to reason, by enabling us to seize and to retain in memory concepts and systems of thought, and by introducing us through its selective influence into our social heredity. The need of communication leads us to generalize. To render expression accurate, we are forced to analyze and to abstract the factors in experience. The elements thus revealed are held in memory by the assistance of the word. Through these mental advances we are led into that world of mind which lies behind the social environment, constituting its essence. This discovery enhances the instinctive interest in communication, and thus intensifies to an extraordinary degree the activity of reason and social interplay.

Section 41. *Social memory and written language*

Oral language strengthens the memory of the individual, not only by fixing in mind the concepts which the different words or idioms express, but also by reënforcing the memory of the individual for complex situations, events, laws, prin-

ciples, or practices through what may be called the memory of society. Where the power of one to recall the past falters or fails, that of another may be stronger. The corrected memory of each tends toward that maximum established by the memory of the best endowed in respect to this faculty. Indeed, this collective memory is fundamental in fixing the meanings of words, and so in the process of holding in memory meanings through their agency. If one is to be understood, he must always attach the same meaning to a word. Society is forever correcting our forgetfulness in regard to concepts by compelling us to use words in an uniform way.

Reënforcement of individual by social memory through oral language

At first the social support of the memory of the individual is not consciously recognized. As the material held in collective memory increases, however, the use of its resources becomes more reflective. Certain individuals or classes, known to be well endowed in respect to retentiveness, become authoritative. Such people improve their position by deliberately committing to memory important facts or legends of history and the details of laws and customs. Often this task of the mind is lightened somewhat by the use of rhythm, alliteration, rhyme, or any other literary device whereby associations are made more effective and memory strengthened. Doubtless, in this fact is to be found an important, if not the fundamental, reason for the literary form in which the basic tradition of early civilizations is often preserved, especially before the advent of written language. Poetry flourishes, not merely because of its appeal to artistic taste, but also because of its assistance to memory. Thus the Homeric bards were enabled to preserve the fundamental ideals and traditions of the Greek people, because these were embodied in poetic form. Poetry tends to decline when at the advent of written language its function as an aid to memory practically disappears.

Rise of a class authoritative in matters of memory, and of devices for memorizing

Advantage of written language among these devices

All the devices of oral memorizing are set at naught by the invention of written language. Here we have an instrumentality that surpasses the highest powers of the individual. It is true that it rests back on individual memory for the meaning of the words. However, there can be no doubt that when words are written they tend to assume a much greater fixity of interpretation than before. Various contexts determine a meaning closely. Thus manuscripts and inscriptions preserve their records faithfully through the ages, since by a comparative study of their characters the meanings of these are made clear to the decipherer. Hence, it becomes very difficult to distort the meaning of written words unconsciously, and conscious modification must be justified. Moreover, if written language helps in fixing the meaning of words, much more does it aid in preserving traditions, descriptions, laws, and usages, in short, all matters that involve many details and therefore require elaborate forms of expression.

Written language and the school

Thus collective memory becomes reënforced by an agency that expands almost indefinitely its powers. But in order to utilize this instrument, the school becomes necessary. We have already traced the rise of this institution from the primitive exercises of adolescence.[1] The factor of instruction in tradition, law, and belief, which enters therein, gradually increases in amount. It becomes impossible for any save those who have especial talent, and who devote themselves largely to the task, to learn all that is thus preserved. Hence oral tradition becomes the property of a class, an instrument of authority, a means of social control, and subject to whatever modifications this class may, from interested or other motives, see fit to introduce. But even to such a class oral communication may finally break down as a means of preserving its treasures. Pictorial representation becomes conventior-

Literacy as the monopoly of a leisure class

[1] Compare § 13.

alized and the ideograph invented, doubtless, largely as a result of a constantly growing fear that memory, in spite of all precautions, may play one false, or to relieve the intolerable burden that accumulating material places upon it. With most people a knowledge of writing has remained for many ages the exclusive property of a select class, the members of which have the leisure, the ability, and the opportunity to receive instruction in it. Among them the school as we know it — that is, an institution the primary purpose of which is to develop literacy — appears. The monopoly of power to read still further exalts the authority of the learned class.

Ultimate democratic effect of written language

Thus devotion to the task of memorizing, and the invention of devices to aid it, culminating in written language and the school, are bound up with the development of a specialized literary caste. Writing at first tends to increase their authority. Ultimately, it tends to destroy this. For written language can be learned so much more easily than the mass of tradition can be committed to memory that independent access to the treasury of the past is made possible to a wider circle of individuals through its invention. Writing tends to equalize the memories of all who learn it. Ultimately, this fact begins to be felt in a struggle on the part of the uncultivated classes to share in a knowledge of the light. Moreover, the act of committing a tradition to writing depersonalizes it, as it were. It is no longer associated closely with the talent, the training, the individuality of persons by whose memory it is preserved. It becomes an impersonal thing to be shared by all who read. Whatever of sanctity it possesses becomes progressively lost to the learned class, the more the tradition separates itself from living men, and the more reading ceases to be an esoteric art.

The principle that is here outlined can be said to apply quite universally in human history. Put in a general form, it declares

that any advance in written language by which the preservation through it of culture is rendered easier not only strengthens the social memory and so the grip of tradition, but also tends to democratize this. Thus we find that the reduction of law to written codes often occurs in connection with a democratic movement. The laws of Solon are said to have originated from such an emergency. The mass of the people feel surer of the integrity of their rights if these are stated in a form not subject to the manipulation of the judicial class. Such security is dependent, however, on the literacy of at least a portion of the governed class, and implies that the advance in writing has brought about a tendency toward the democratization of the power to read. Again, the invention of printing, although at first utilized largely by those already interested in books, proved ultimately a most important cause of universal literacy. It cheapened reading matter, so as to put it within the reach of all who could learn to read, and the general movement toward democracy has made it possible for all to be literate.

Thus it is that improvements welcomed by the learned class as increasing their efficiency ultimately tend to destroy their monopoly. An equally paradoxical effect may be noticed in regard to the conservative influence of written language. So long as customs, laws, and beliefs are preserved by oral language, they can be changed readily and unconsciously. To realize this, one has only to recall the ease with which rumor modifies the message that it spreads about. Such changes are often intentional, but it is a matter of common observation that differences in point of view, variations of emphasis, and defects in power of understanding or of communication, all tend to transform the original fact or idea, without any conscious falsification. Similarly, oral tradition becomes modified, lending itself to such changes as new emergencies, new

points of view, new interests create. It is a flexible affair, easily adapted to the particular needs of the individual, class, or age that preserves or utilizes it. Written language destroys much of this fluidity. It steadies the memory, not permitting the reconstructions of a changed mood or intellectual standpoint. This gain in firmness carries with it at first a loss in adaptability. The Chinese educational system is a stock example of a tradition preserved intact until it has grown out of touch with the actual emergencies of life. It is impossible to constrain human activity permanently within the forms of such customs as even the wisest of men devise. Nations, even those in isolation, move ahead.[1] The hollowness of preserving the form after its real value has disappeared must ultimately be noted. Hypocrisy must at last become conscious of itself, and then revolution is inevitable. The process is swifter with nations that are much in contact with others, and subject to the vicissitudes of international struggle. Thus a few centuries after the substance of Hebrew tradition had been committed to writing by Ezra we find Paul complaining that "the letter killeth, but the spirit giveth life." Such a discovery tends to destroy the early faith in the infallibility of those sources from which tradition is derived. When the sanction of faith is lost, that of force is doomed. Revolution begets new forms. But these in turn are seen to be of only temporary value, and give way. Ultimately mankind comes to feel the spirit of progress, to know that memory should be the servant and not the master, and that the "golden age" is ahead. Thus written language, at first intensely conservative, comes ultimately to provoke that most progressive of conditions in which men constantly strive for the betterment of their institutions. Destroying the tendency toward unconscious advance which oral tradition permits, it compels, in the

Primary conservative effect of written language

Its ultimate progressive effect

[1] Compare § 39.

long run, the rise of a conscious spirit of progress that is untrammeled by a stultifying worship of the past.

Similar effects on race and individual

The same agencies that improve the memory of a race, making for stability and ultimately for conscious and intelligent reform, operate in the education of the individual to foster firmness of character and a conscious struggle toward betterment. Character, according to Herbart,[1] depends upon "memory of the will," and this finds a most important auxiliary in the reminders of teacher and parent. Whatever makes for permanence in the memory of society reacts upon the power of the individual to restore his own past. The memory of each is to a great extent an inference from his treatment by others. The keeping of a diary may do much to clarify and render effective one's ideals, and also cause one to substitute for the ideal of mere consistency that of improvement.

Summary

We may sum up the thought of this section as follows: Language is an aid to the memory, not only because the word helps us to discriminate and retain the concept, but also because through communication the memory of the individual is supported by the collective memory of all, especially by that of the best. Those who by talent or training are best situated to keep in memory the traditions become a privileged, learned class, authoritative as the guardians of social heredity. Among them devices for aiding the memory appear, the most important of which is written language. This instrument leads to the school, and so long as it can be monopolized by the learned class, it enhances their authority. Ultimately written language tends toward democracy, since it can be learned by all, and since its acquisition tends to equalize men in respect both to their efficiency in preserving the past and to their ability to get at the sources of authority. Finally, written language fosters so literal a conservatism that it creates the plague of

[1] *The Science of Education*, third book, Ch. I, II.

the archaic law or institution. When the evil of this condition is once recognized, men are compelled to lose their primitive respect for the past and to assume consciously the revolutionary and the progressive spirit. This change in the spirit of the institutions of men is paralleled in the growth of the character of the individual under the influence of the social mind. One's "memory of the will" is strengthened so that he comes to have ideals, to struggle for consistency, and finally to turn his efforts toward betterment, even at the expense of breaking with his past ideals.

Section 42. *Education in language*

Language the fundamental concern in education

Since the most important agency of social heredity is language, society has rightly emphasized it as the fundamental concern in education. It is the leading "acquired character." Through it alone is a social environment of the higher type made possible. Throughout the ages the linguistic aim has dominated the school. But this devotion of the school to language has been severely criticised. Social, political, religious, educational reformers are fond of satirizing the love of words that overmasters the learned professions, particularly that of teaching. The spirit is distinguished from the letter, the fact from the word, and the cry is raised that mankind has become enslaved by verbiage, and can be saved only by abandoning symbols and associating more freely with realities.

Criticism of the devotion of the school to language

Two serious errors of verbalism

This criticism is at once superficial and true. It is superficial because it assumes that the human mind possesses a considerable power of dealing with realities apart from words. It is true because the interest in words on the part of the schoolmaster leads to certain oversights in instruction. It may keep him busy in teaching words when the concepts that

they express have come to be practically valueless. It may cause him to neglect a proper study of the concept in its relation to realities, with the result that it does not prove as available as it should in the analysis and treatment of new situations.

(1) Verbalism as interfering with the reconstruction of concepts;

These two criticisms sum up the serious follies of verbalism. The first fault amounts practically to Bacon's "idol of the market-place." Words constrain us to think in certain ways, and often these are not the best ways of regarding the facts. Forms of expression are an indispensable social adaptation, but, like most of these, they vary in value with the ages. They are the main avenue of approach to social heredity, but social heredity contains much that should from time to time be abandoned. Hence, in teaching words one must be careful to note whether the concepts they express are really worth while, whether the analysis of experience to which they lead is one that meets the emergencies of life in general, and especially to-day. The possession of a name is apt to give a concept a fictitious value. Since the name is a means of preserving the concept for the individual and for the race, we are apt to assume that because a concept has such a designation it is worth preserving. This by no means follows. So far as the concept is concerned, the value of the name lies in that it holds this concept in individual or social memory long enough for it to be tested as to its value. But those who are interested in names — the learned class, whose business it is to preserve social heredity through words, and the schoolmasters, whose task it is to teach words that through them social heredity may be accessible — are apt not to notice when a concept has failed to stand the test of practice. They preserve terminologies when the systems of thought which these represent have in effect proved to be useless or unreliable analyses of experience. It is not realized that forms of analysis

that are suited to one stage of social development may be without value or positively harmful in another. Thus words tend to interfere with that free struggle for existence among concepts by which alone the latter can become truly scientific. The love of language, like conservatism, prevents hasty abandonment of ideas, but at the cost of keeping alive much that functions in waste.

(2) verbalism as failing to provide for the useful recall of concepts

The second fault of verbalism lies in the tendency on the part of the school to be content with such a knowledge of the concept as insures a working mastery of the word that designates it. The learning of a new word means an addition to one's equipment of concepts. The acquisition of a foreign tongue or of a scientific or philosophic terminology means a new system of concepts, — an expansion not only of words but of ideas. The consciousness of this value leads the school to rely too exclusively upon it. This attitude is supported by a recognition of the fact that the generality of the concept is the quality that makes it applicable to many situations, and, therefore, the essence of that which is practically useful in experience. It is assumed that, since a comprehension of the meaning of the word implies a seizing of the concept in the abstract or generalized form, the knowledge of this meaning is all that one needs in order to apply the concept to use.

We have already pointed out that the mere knowledge of the abstract concept does not necessarily involve the power to recall it when it might prove useful.[1] One may know much about the principles of mechanics, and yet fail to recognize in a new case an occasion for the application of some of this knowledge. It is necessary that one shall have noted the application of the concept to many situations superficially much different from each other in order to get it well under power of recall. That accurate knowledge of the concept which comes

[1] Compare § 30.

from mastering the word and its general meaning does not suffice to put it in a position to be readily utilized.

Need of training in the use of words

It is interesting to note in the development of a vocabulary a difficulty similar to the one just shown to arise in connection with the effective mastery of a concept. All men know the meaning of many more words than they actually use to express themselves. It is the business of the school, not only to teach the meanings of new words, but also to practice in their use, so that the gap between the vocabulary understood and that utilized in speech may not be too great. Words, like concepts, may lie as useless lumber in the mind, and the only device that education knows to meet this difficulty is to force both on the attention in such a variety of cases that the mind associates with them such an abundance of incidental data as to afford many links for their recall in addition to the fundamental common relationships that they represent. Thus one grows expectant of them even in somewhat strange surroundings.

Need of training in keeping written records

As a final word upon the subject of instruction in language, mention may be made of certain values of the written record that need to be impressed on the learner. In the evolution of written language writing preceded reading, but in the teaching of the art reading almost universally comes first. Hence it is that our power to read as a rule outruns our power to write. We utilize what others have recorded, but make no contribution from our own minds to the permanent records of language. This attitude may be partly the result of lack of independent creativeness and energy on the part of the great majority. They are born not to lead but to follow, to rely on others rather than to make use of devices for self-support. Such passivity is not unconquerable, however, and it is the part of education to make men self-reliant and resourceful. Among the possible resources of the individual, not the least

is the habit of supporting the memory by the use of the written record.

It is unnecessary to enlarge upon the gain in social efficiency that comes from a knowledge of effective methods of written expression and from the habit of their use. This value is so evident as to have engaged fully the attention of master and pupil alike. But comparatively few realize clearly the gain in amount and reliability of resources for judgment that comes from the recording of the experience upon which this process of judgment depends. To the scientifically trained, it goes without saying that observations which are not noted in writing will very probably be distorted or lost. Wherever in the conduct of life the scientific spirit prevails, there the generalizations upon which practice is based are founded on observations the nature of which is kept with care by means of a written record. Other generalizations may well be characterized in the scornful language of Plato as mere opinion.

Scientific and historic records

The scientific record that is here in view is not functionally the same as that which may not inappropriately be called the historic record. There is a clear distinction between a record that preserves facts accurately merely for the sake of drawing from them correct generalizations and one that preserves facts for their own sake, or facts that without any further generalization may be of importance in determining future conduct. The latter, or historic, record has an obvious value, and one recognized from the very beginning of written language. The desire to protect such legal facts as by their specific nature determine future action, *e.g.* contractual relations, from the treachery of memory or of cunning was an important motive for the invention of writing. So, too, the merchant has from time immemorial kept books to enable him to remember his debits and credits. If one has many engagements, it seems almost necessary to keep a record of them. Such historic

records are valuable primarily because they involve the future conduct in reference to each other of two or more parties, any of whom may treacherously repudiate his obligation if there be no written record or witness to refute him. They have, however, the secondary value of sustaining the memory against its own imperfections as well as against the trickery of others.

The value of the scientific record has not been so generally felt. Where a fact is of no significance except for the sake of helping to sustain or to disprove a generalization, one is apt to trust it to memory. The merchant has not fully realized the value of such records as help him to see which lines of business are most profitable. The legislator has not made much of keeping a written account of such data as concern the effect of laws. Most physicians regard their memories as able to preserve an adequate account of the effects of their medicines. It is true that a sense of the importance of the scientific record is gradually creeping into the professions. We utilize in generalization such historic records as may prove of scientific value. But the scientific record is often concerned with facts that from the historic point of view have no interest. Until they are put into generalizations they are trivial and insignificant. The appreciation of the value of such facts is, therefore, in need of careful cultivation. It is among those attitudes that the school will find well worthy of attention.

Especial need of training in keeping scientific records

It is probably correct to say that the school to-day, even in its upper departments of college and university, stresses the keeping of what we have called historic records rather than those that are scientific. Note taking that one may pass examinations, or even that one may write essays, is usually an historic record. The facts they preserve are of specific value, and not, as a rule, to be used merely as a basis for generalization. Here, then, is an opportunity for the school to lead the way toward popularizing the spirit and the methods of sci-

entific research. In education, in politics, in business the need of scientifically gathered data is beginning to be intensely felt. Such a demand cannot fail to have its reaction upon the instruction of the school. It can hardly be expected that children in the elementary grades can be trained to the highest appreciation of scientific method. Yet even so far down in the school as this much in the way of a critical spirit, a power to distinguish between carefully established principles and mere opinions, and a sense of the value of the written record in supporting generalizations can beyond question be given.[1]

Summary

We have in this section dealt with the most general educational issues involved in linguistic instruction. The acquisition of language is with man the first and most important step in attaining his social heredity. But in stressing education in language the schoolmaster is apt to fall into verbalism. Two serious evils may follow. The learning of classic words may tend to perpetuate concepts that are or should be obsolete. Terminologies preserve ideas and systems of ideas after they have outlived their usefulness. Again, the study of the concept may be confined to those general meanings with which the word is always associated. If so, one fails to get it well enough associated with concrete situations to be readily recalled when it should be used. Herein we find a phase of verbalism far more common and far less easily detected than the wooden and patent blunder of teaching words without meanings at all. Finally, the power to use written language effectively is a result which, because both of its difficulty and of its importance, should receive especial attention in education. One should be taught to express himself effectively in writing, and also to make written records both historic and scientific. The making of scientific

[1] Compare McMurry, *How to Study*, Ch. VI.

records is to-day a comparatively rare thing in the world at large, and is very little emphasized in the school, especially in the elementary grades. There is, however, a rapidly growing demand that the practice of various professions should be made more scientific. Training in the scientific spirit by the school can do much to accelerate this movement. Even children in the elementary grades can appreciate the difference between a judgment based on recorded facts and one dependent on a vague massing of material in memory.

CHAPTER XIII

PLAY

SECTION 43. *General theory of play*

Play the fundamental educative activity

AMONG the forms that educational activities assume, that of play is so important as to demand a special chapter in the theory of education. Play is the characteristic activity of infancy, and infancy is the time of special capacity to learn. Hence, it would seem like a logical conclusion that the fundamental educative activity is play. Indeed, there can be little doubt that this proposition is very near the truth.

Child play somewhat different from that of adults. Definition of play

At the outset of the discussion of our topic, it is necessary to distinguish between the play of children and that of adults. While the latter grows out of the former and is, perhaps, fundamentally the same, still there are some differences in motive, and there may be a very large contrast in function. Play is commonly understood to mean any activity pursued for its own sake without reference to the utility of its results. Herein both adult and child play agree. But in the plays of the child the educational utility is far more in evidence than in those of the mature person.

Instinctive nature of child play

Taking up the play of children, one comes at once upon a very interesting question. Why should the child like to do that which is of such value in his development? The proper answer would seem to be that it is because the activities of play are instinctive. This characteristic renders them inevitable and pleasurable without thought of consequences. The child must play, first, because he has instincts and must strive

to satisfy them, and, second, because his equipment of instinctive acts and habits by means of which the instincts may be met is imperfect. He lacks strength, maturity of instinctive associations, adequate equipment of habits and experience. He feels the force of the instincts and expresses them through immature forms. This is child play. That he does not feel dissatisfied with such activity, and long for such results as mature power can achieve, is due to two subsidiary conditions. The first is that through fostering agencies he is supplied with those necessities which it is the business of the instinct to urge him to seek. He is not driven by harsh need of self-support to realize the difference between play and mature activity. The second is that through imagination he is able to invent a world of make-believe, and thus to bridge the gap between what he wants and what he can get.

Two other theories of play

The theory of play thus outlined is essentially that of Professor Groos,[1] and may be said to be the one most generally accepted. Other theories, the "recreation" theory of Lazarus,[2] and the "surplus energy theory" of Schiller[3] and Spencer,[4] may be said to be suggestive and contributory, but not fundamental. That adults turn, when they play, to some activity other than that which is wearied is an usual, though by no means an universal, rule. Play is not always recreative. Again, if we were to suppose this to be its function, we might well ask the nature of the forces that lead to so beneficent an activity. To say that men turn to play because they are tired of work is at best a merely negative explanation. Why do they not content themselves with resting? If the answer is made that the most effective rest is in recreative activities,

Criticism of the recreation thory,

[1] *The Play of Animals* and *The Play of Man.*
[2] *Die Reize des Spiels.*
[3] *Letters on the Æsthetic Education of Mankind.*
[4] *Principles of Psychology*, Part IX, Ch. IX.

one wishes to know the impulses that drive toward these. The only answer is that they must be positive instincts, which cause certain forms of activity to delight for their own sake.

Thus, even with the adult, the recreation theory cannot explain the positive activities of play. To the child, in whom play is the typical activity, the view seems to have no application. The same difficulties beset the surplus energy theory. Just as play is not always recreative with adults, and seldom so with children, so the young and sometimes even the old play when they have little or no surplus energy. It is well known that children will play when they are tired or sick. It is true that a playing child will, other things being equal, be likely to employ powers that are not fatigued, yet if the incitement be sufficiently strong, he may continue to strain his jaded muscles. Thus the surplus energy theory merely serves occasionally to explain why children choose one sport rather than another.

of the surplus energy theory

The form of play cannot be determined apart from the instincts. In his sports the child manifests the fundamental needs of his life by such activities as he is able to command. That these activities are only playful is primarily due to the fact that he is only a child. Even with men play usually takes the form of some occupation in which the player is merely an amateur. In general, activity will be playful when it is immature, or when the situation that evokes it is not such as to demand, or, perhaps, even to admit, its serious exercise. The so-called instinct to play can probably be resolved into the various instincts that give form to the play impulse. The instincts are so powerful that they drive the individual into activity. They make him essentially an active being; to seem to love activity for its own sake, so that when he is not coerced into work he must, unless exhausted, turn to play.

Instinct explanatory of the form of play

Distinction between play and work

Since we have so far discussed in the main the play of children, we have had in mind an activity which has no special utility except that which is educational. But if play is defined as that activity which is attractive for its own sake, it is not of necessity without consequences that are valuable independently of their educational significance. Play may or may not be serious. Similarly, work, which commonly means activity for the sake of some ulterior end, may be so pleasant that one would continue it even though its utility were absent. Thus the boundary lines between play and work seem vague and indeterminate. From the practical point of view, however, a distinction can be made. Wherever utility is so important that it would constrain one to a certain activity, even though this were not attractive in itself, there we have work. On the other hand, wherever the motive of utility is relatively insignificant, there the activity may properly be called playful. Thus with adults play means the avocation, work the vocation. One's vocation may be delightful to him, yet he feels that he cannot abandon it, even if it were irksome. On the other hand, we feel no such coercive motive in our avocations.

Play as preparatory to the avocation

With the lower animals and primitive men play leads insensibly into both vocation and avocations. In fact, in these cases no sharp line of demarcation exists between the two phases of adult life. In civilized society there is some doubt as to whether play can be used to any extent to give specific preparation for the vocation. This issue will be debated later. But there can be no question that the play of the child leads into the avocations of the man. There is a continuity between the games of childhood and the incidental pursuits of later life which it is of great importance for education to note and to respect.

We may sum up the contrast between the play of children and the avocations of men somewhat as follows. Child play

functions mainly as an education. The avocation is partly educative, but it also serves as a recreation, as contributory to social efficiency by fostering contact with others in a variety of ways, and as productive of many results of direct utility, such as artistic surroundings. Both child play and the avocation are pursued from interest in the activities for their own sake. In the case of the child, this interest is not clouded by any feeling of the lack of importance in what he is doing. The fact that the vocation does not exist for him, coupled with his power of make-believe, suffices to render him contented with play. In the man the avocation is often felt to need excuse. It may be justified because it appeals to the judgment as to what is really desirable or in good taste, or because of the need of recreation, or because the person has a right to do as he pleases with his idle time. The interest in the avocation may spring from its conformity to the tastes of the individual, from an intense desire to be active, — a surplus energy that, owing to the situation of its possessor, finds no need of discharging itself in the pursuits of a vocation, — or from a survival of child interest in certain specific activities. This last feeling may be intensified by reverberations in memory of the joy of childhood in similar pursuits. It is doubtless largely this that makes some so fond of witnessing as spectators sports in which they formerly took part as players.

Contrast between play and avocation

There is yet another phase of adult play that needs consideration. The play of the child often becomes the serious pursuit, the work of the man. This happens because of its grip upon social interest. Through the game or the avocation one may gain praise, prestige, and, indirectly, many other benefits of the highest utility. Hence men pursue such occupations, not for their own sake, but for their utility. Again, their hold upon human interest renders it profitable for some to make a vocation of catering to the taste for them. The

The avocation as the basis of the vocation

professional athlete, the actor, the artist, perhaps one may even say the scholar and investigator, come into existence because men are willing to pay for the entertainment they afford. The avocation of the many becomes the vocation of the few.

Hence it comes about that the game that at first functions mainly as an education proves useful, not merely for recreation, but also as the serious business of life. The pursuits of leisure become included among the vocations. That this should continue to be so, however, requires that these activities should be for the mass of men avocations. Thus the play of the child, in leading into the avocations of the man, is preparing a social demand in which a large number of the vocations take root. Ultimately, the callings that cater to what have been historically the leisure interests of life will, doubtless, far overshadow the others in the numbers that are concerned in them.

Educational outcome of play

The play of children, then, consists of the immature manifestations of their instincts. Such activities lead on into that large mass of interests that sustains among men all pursuits except those that minister to the simplest necessities of life. That which men do for the sake of the doing is that broader phase of their lives in which they join with humanity to create the standards of life, — the demands which men in their vocations strive to supply. Thus play educates, not so much in the vocation, as in those motives that make work, whether in the child or the man, seem worth while.

Section 44. *The games of childhood*

Before discussing more minutely the educational value of play, it may be well to analyze briefly the character of the games of childhood, and also to take a rapid survey of the

part that the game has played in the history of education. By a game may be understood any specific form that play assumes. The games of childhood, and in fact of all ages, may be classified as individual or social, according as they involve one or more than one person. It is evident that individual games are relatively far less numerous and important than are those involving social coöperation. Moreover, such games as may be said to be primarily individual may also assume a social form and, indeed, come to have largely a social character.

Games as individual and social. Importance of the latter

The individual games may be roughly classified into (1) impulsive activities; (2) games appealing to the æsthetic sense; (3) feats; and (4) destructive and constructive sport. The simplest form that the play impulse takes is that of mere activity, without any conscious interest in either its form or its results. Much of this sort of play is mere instinctive or reflex activity, but the attitude of the child makes it seem purposeless. Running, leaping, climbing, getting the body into a variety of positions, grasping, and throwing things about are illustrations. Such activities may also be mental and take the form of an endeavor to get surprising or lively sensations or that of imaginative invention.

Classes of individual games: (1) impulsive activities. Interest in mere activity;

As the child accumulates experience and recalls his earlier activities, mere impulsive play becomes transformed into games in which either the form of what he does or its results or both constitute important centers of interest. Where form is the attractive element, we may say that the appeal is to the æsthetic sense. Children love repetition, the recurrence of the familiar, rhythm, and rhyme, and simple musical form. When they grow old enough to grasp the customary, the conventional, they become devoted to it, and protest strenuously against any innovations. The child displays this taste in his solitary games and in his imagination, in the tales that he tells, and in his criticism of the stories that others tell him.

(2) æsthetic games. Interest in the form of activity;

(3) feats. Interest in the results of activity;

The interest in performing feats is, perhaps, the simplest phase of sport in which attention is directed toward the result. The stimulus is here, of course, often the desire to cope with or to surpass a competitor, and hence we have a social game. However, children endeavor to "do stunts" without any pressure of rivalry. The surroundings invite the active child to test himself; memory offers a glimpse of his past activity that he strives to surpass; imagination, stimulated especially by tales of the deeds of others or by a direct perception of unusual forms of skill, provokes the child to emulate the admired acts so far as his physical or mental powers permit. Here the feat merges into the dramatic game.

(4) destructive or constructive sport

The interest in results culminates, so far as individual games are concerned, in destructive or constructive sport. The object of the game comes to be clearly distinguished from the activities by which it is attained. Destructive sport, beginning in such activities as breaking things and pulling them apart, or destroying them and throwing them about, is at first hardly distinguishable from mere impulsive activity. Later, however, it becomes reënforced by curiosity and the love of displaying power, and the child destroys in order to learn or to exhibit his strength. Such interest is, however, temporary, as a rule, and it is in constructive sport that the genuine delight in the outcome of individual activity becomes most clearly evident. Here the child plays, not merely because he likes to be active or because he is fond of reproducing certain pleasant types of activity or of doing new and unusual deeds, but also because he takes delight in the product of his play. More and more the game is becoming a means to an end, — an activity pleasurable largely because from it emanate certain desirable, perhaps even tangible, results.

The same transition from interest in mere activity to interest in the form and, finally, in the outcome of this activity is seen

in the development of social games. They may be classified into (1) simple activities of social intercourse; (2) æsthetic games involving social organization; (3) dramatic games; (4) games of individual rivalry; (5) games of group competition. Classes of social games

By simple activities of social intercourse is meant such mere impulsive sports as please, not only for the sake of the activity itself, but also because others share in it. To run, jump, climb, throw things about, etc., are more pleasant when others are participating than when alone. The instinctive love of social interplay, of expression and response, the nervous stimulus that comes from living presences, enter in to enhance the attractiveness of any activity that involves social intercourse. Often such sport takes the instinctive form of physical combat of some sort, even when there is no sense of rivalry, as when the little child engages in mimic struggle with an elder person. The result is here of no importance. The interest lies in the instinctive activity, which is pleasant in itself. (1) Simple instinctive social activities. Social intercourse as intensifying interest;

Similarly, when we pass to the æsthetic games involving social organization, we find that social intercourse heightens the interest and increases the possibilities. Children may arrange themselves in a form that has æsthetic value. Ring games are almost without number. Social coöperation adds greatly to the number of possible devices in the way of rhythm, or song, or rule of procedure. Games become complicated, and the children are able to play the more elaborate forms because coöperation supports the memory for details that would be too great a strain on the individual, and because social interplay sustains interest when that in mere æsthetic form might flag. At first, these games appeal to social instincts less fierce than that of rivalry. This factor, however, creeps in at an early date, although it does not become a predominating interest until at least as late as the seventh year. (2) social æsthetic games;

(3) games of "make-believe." Interest in admired form;

Practically all except the simplest games of children are learned by imitation. Those in which adult activities are mimicked may, perhaps, be called dramatic games and regarded as a distinct group. Playing with dolls, playing horse, playing Indian, etc., illustrate a type of activity that appears in endless variety. There is no thought of valuable consequences from the activity involved. The life of men and women evokes the æsthetic admiration of the child because it appeals to the developing instincts of boy or girl. The game is really one of æsthetic interest, but it gains a peculiarly social character because the child finds in the life of older people a more satisfactory expression of his nature than in activities which he can imitate without much strain on his powers of make-believe. The desire to be and to do as the highest standards of society suggest is here intensely felt. Such games are not dramatic in the sense that the players strive to appeal to an audience. Perhaps a more appropriate name for them might be games of "make-believe," for the interest, whenever it can be said to be more than pleasure in variant types of activity, lies wholly in the sense of identification with some admired phase of life.

(4) games of rivalry. Interest in results;

The interest in the form of the sport reaches its climax in these games of "make-believe," which constitute perhaps the most common type of play of children between the ages of four and ten. Eventually, the interest ceases to depend mainly on the fact that the game reproduces a social model which is admired, and comes to lie in the opportunity that the game affords for that fascinating form of social intercourse, rivalry. At first, the rivalries of children are passive affairs. In the earlier games competition appears in eagerness to be selected in preference to others to play a special part in the game. The children may appeal for such a favorite rôle by entreaties, cajolery, or complaint. but there is no active

endeavor to win the prize of victory by excelling in some activity. It is this latter trait that characterizes the later games of rivalry, the approved forms of which are adapted by a long process of selection to bring into the most vigorous contest the leading functions of the individual.

(5) games of group contest

Finally, we have the games of group contest. Here rivalry becomes, in part at least, subordinated to devotion to the common interest of the side or team or whatever the social unit may be denominated. It is more fascinating to play with a side and lose than to play as an individual and win. In these group contests nearly all the instincts of the individual are called into operation. The love of activity, the æsthetic interest in harmonious and familiar organization and in playing according to rule, the instincts of sociability, rivalry, coöperativeness, and leadership, all come into play. Such games constitute the great passions of youth, and even the adult feels their compelling fascinations.

Effect of games of rivalry on judgment

Up to the time when the motive of rivalry becomes prominent, the plays of the child have resulted principally in expansion of resources rather than in growth of judgment. His potentialities in action have been exploited, experience has been accumulated, imagination fed and stimulated. The process of selecting that which is most appropriate, most pleasing, fittest among these accumulating resources has been going on, but there has been no insistent emphasis upon it, so far as the playful activities are concerned. In this field of sport, as long as the interests of older people have not been crossed, compulsion has not interfered with the taste or caprice of the child. This freedom suffers a serious check when rivalry becomes dominant in the game. Competition banishes all activity that is not effective in winning. It checks the exuberance of the imagination, confining it to the true or, at any rate, the approved. The child's constructions must now

be limited to that which possesses excellence, and the adult model is no longer merely an invitation to activity, but a command that this activity shall be good. The struggle to conform, felt hitherto in the serious relations of life, is transferred to the games. Here it becomes fierce and overwhelming, for only through conformity can the child attain the prizes for which his fellows in society are contending. The will of the elders he may cajole or deceive. He may even rebel against it, with hope of pardon or of compensating advantages. But the outcome of a struggle with his peers means success or failure, without hope of reversal or compensation. His playmates will not "baby" him. Thus the age when games of rivalry begin to predominate is an age in which the child feels the pressure of the standards of society as never before, and under this coercion the exuberant products of his free activity are subjected to sharp criticism and selection. On the one hand, the developing judgment of the child makes him aware that in society the most positive way to succeed is to excel. On the other, the rise of the instinct of rivalry sharpens his judgment to distinguish the social demands conformity to which means success.

The age of rivalry

It is impossible to map out childhood into sharply defined epochs. Nevertheless, the period between eight and adolescence may not inappropriately be called the age of rivalry. During this time the child is rapidly assimilating the social standards by which he can determine the true, the right, the effective. As he goes on toward adolescence, he discovers that different people, different social groups, have different standards. Just as the growth of a sense of standards gave rise to a sharp struggle for existence and selection of the earlier crude spontaneous products of body and mind, so the multiplicity of ideals gives rise to a struggle for existence. But while in the earlier struggle it was the products of inner spon-

taneity that were subjected to selection by externally imposed standards, here these external criteria are in turn subjected to selection by the standard of inward approval. Hence this new judgment seems, at any rate to the youth, like an act of independent choice. He feels himself a factor in determining those very criteria the weight of which has been so heavy upon his freedom. At adolescence, when physiological changes complete the physical equipment of the adult, the intellectual changes meet this advance by introducing the independent spirit of the mature and responsible contributor to social interplay.

The age of independence

This ethical independence is partly a result of the games of contest between groups, and partly it produces them. In such sports the mutual dependence of members of a side makes all of importance. The continuity and success of the game depends upon the willing coöperation of all, and each plays his part in determining the conditions without which his coöperation cannot be obtained. Thus the individual assumes the position of one who helps to form the standards to which all conform. He becomes, in effect, an independent element as well as a dependent one. The conditions that make each dependent on all make all dependent on each, and in such activities a larger independence arises. The games which foster this attitude are logically the games that suit the child who is passing out of the age of rivalry into what may be called an age of independence.

Ethical independence and games of group contest

If the games of contest between sides lead into ethical and social manhood, the constructive and dramatic games lead up to vocational manhood. However, before this last result is attained a long apprenticeship of training that is distinctly work is ordinarily necessary. Hence the free spirit is lost. The virtues of industry and self-control rather than those of courage, independence, tact, loyalty, and command are cul-

Games leading to the vocation

tivated. In a general way, the fundamental service of work in education is to cultivate the power of manipulating materials rather than men.

Summary

It is evident, then, that the games of childhood lead up from the simple love of activity to which they at first appeal, to interest in æsthetic form, and from thence to a keen appreciation of those standards and ideals that constitute the motives in the life of a civilized society. Promoting at first the development of physical control and of experience, they later turn to the task of fostering the imagination and, finally, the judgment. Through their appeal to the sense of rivalry, they enable the coercion of the child by the social standards. Through their appeal to the instinct of coöperation, they encourage the child to choose his own standards, tastes, ideals. Since they are for the most part social, they cultivate especially the social virtues and aptitudes. Since society is the common master that all vocations serve, they introduce us to the motives that lie behind the vocations. However, it must be admitted that even in the dramatic and constructive games we find in play alone no introduction to the vocation itself.

Section 45. *The game in the history of education*

Uses of play for animals. Importance of social training

A sketch of the part played by the game in the history of education will afford some suggestions as to its educational value. In the life of animals play finds two functions: first, that of strengthening and maturing the instinctive acts, and of building up a body of experience concerning both their relative value in the service of the instincts and the details of their use; second, that of social training. These two uses are fundamentally the same, for social development is founded upon instinct, yet even in animals the social training derived from play is so important as to deserve to be separated from

the effect of this activity on the other instincts. The instinctive friendships and hostilities of the brutes, their methods of coöperation and of combat, are extensively affected by experience. It is here that education is peculiarly important, for, as we have seen, a social environment consists of readjusting individuals, and hence nature needs help from nurture in order to keep pace with the demands either of competition or of coöperation. In a general way, infancy, capacity for education, playfulness, and ability to deal with social conditions go together. The plays of animals are largely social in character.

Play as the leading form of primitive education

With primitive men play, supplemented by severe negative discipline, such as reaches its culmination in the exercises of adolescence,[1] affords nearly, if not quite, all the education. The power to work is not markedly developed. The rude forms of skill that are possessed can frequently be learned by imitative play. Important as are the construction of shelter, the making of clothing, the use of fire, tools, etc., man can acquire these arts very easily, and civilization is well advanced before they demand any elaborate apprenticeship. On the other hand, social organization, involving language and political and religious institutions, together with a mass of common usages, presents even to primitive man an enormous quantity of material to be mastered by the learner. However, all this material can readily be embodied in activities that are essentially playful. Until written language appears, there is little need that liberal education should involve much genuine work.

Association of the game with religion

The association of the game with religious ceremonial is an interesting feature of its early history. Whenever the members of a tribe assemble for a common purpose, they are apt to celebrate the occasion by games, which are usually prescribed by religious custom and infused with religious feeling. Stated

[1] Compare § 13.

festivals in honor of certain deities, the celebration of births or marriages, funeral ceremonial, the visit of an ambassador, the initiation or conclusion of some important tribal enterprise, as war or the hunt or migration, — all involve games. It is evident that they have a value which is closely associated with that of religion. They infuse the group with a common spirit and aim, and hence like religion they are a most important agency in social control. The game assists religion in its work of socialization by presenting it in forms that are attractive and that involve vigorous social interplay. On the other hand, religion solemnizes the game and strengthens its hold on humanity, converting it from a diversion into an institution.

Reasons for this

One other common feature makes the union of the game and of religious ceremonial easy and natural. The form of both is freely chosen, and no imposed by an evident utility in the accomplishment of certain definite results. Religious worship is, it is true, among primitive men intended to secure the favor or to ward off the hostility of the supernatural powers. However, one ceremonial is as good as another, so long as it satisfies the popular notion of what the gods want. The ultimate standards that determine the survival of this or that custom of worship can only be the values it possesses for strengthening society, on the one hand, and for pleasing the æsthetic taste of the individual, on the other. These same criteria determine the form of the game. It is interesting to note that art, which is a child of the spirit of play and that of religion, is a strange compound of the lightness and the freedom of the one and the profound seriousness of the other, while it justifies itself, as do both, by its value as an agency for social culture and for æsthetic delight.

Play in Greek education

When one speaks of the history of the educational use of the game, thought inevitably turns to the Greeks. More than any other people they utilized this form of activity in

the training of the young. The school life of the Athenian or Spartan child of from six to sixteen years of age was during the earlier periods of the history of these states little else than organized and supervised play. Through such means they gained their physical culture and their training in music. The control of the games by adults made them somewhat strenuous. The social premium upon success was sufficiently great to make the game involve much work, and often to seem, as a whole, work rather than play. Nevertheless, the life of the school was in a peculiar sense an end in itself. The conception of preparation for adult life is almost thrust out of sight by the absorption in the activity of the moment. Moreover, this activity was largely in forms that children employ in play. Indeed, in so far as the old Greek education prepared for the future, it did this in ways that were equally valuable for present uses in the life of the school.

Reasons for its prominence

The reasons for this are easily to be found. They lie in the nature of the Greek civilization and character. It will be noted that in the adult activities of the Greek the game played an unusually important part. It is probably not far from accurate to say that the public games were the most characteristic national institution of the Greeks, just as the characteristic form of Greek worship was a sort of æsthetic revelry. The games of the school life prepared, therefore, with directness for an important phase of adult activity. But back of the emphasis of the game both in the school and in the life of men lay the fundamental social and liberty-loving nature of the Greek. These two traits of character are reflected in his civilization. The city-state of historic times constituted a little community of free men, who lived in close proximity, and who devoted themselves to war, politics, and social life, while their slaves did the manual work. That for which the free child needed to prepare was not a specialized vocation,

but rather independent social activity. As a fitting education for the latter he served an apprenticeship in the free life of the school, where tradition was poetry, and wisdom the knowledge of men. For the training of an aristocracy of free men the game has the great advantages of giving each a chance to participate in leadership and of compelling the leader to rely for his support upon the free consent of all rather than upon blind custom or terror. It may be laid down as a fairly universal principle that all free aristocracies emphasize especially play as an educational agency. Such a principle is exemplified in the education of the Persians, of the medieval knights, of the later German aristocracy in the *Ritterakademien*, and of the English aristocracy of to-day in the Public School.

Play in aristocratic education

The development of written language is primarily responsible for the loss on the part of the game of relative importance in free aristocratic education. This instrumentality becomes so important an adjunct of all phases of political and social activity as to make literacy and some degree of learning a source of power, a badge of distinction, an indispensable acquisition for any who would make themselves influential. The aristocrat must needs master such philosophy and science, such law and history as gives him a grip on the institutions and the society in which he is supposed to be a dominant force. When grammar, rhetoric, and logic add their resources to the art of oratory it becomes necessary for the statesman to go through a prolonged linguistic training. To acquire this body of learning and this linguistic skill persistent effort on matters that look toward future efficiency rather than toward immediate returns to the child becomes necessary. To insure this effort the factor of coercion becomes more prominent in education. The school becomes a place of tasks and of punishment, and the symbol of the rod comes to indicate the schoolmaster. That sharp discipline that hitherto was employed

The higher learning and the disappearance of play from the education of leaders,

only to inspire the proper regard for social ideals, as in the adolescent exercises, is transferred to the laborious task of acquiring learning.

from education for leisure

The accumulation of learning means not only more laborious education for those who would become social and political leaders, but it also creates a new ideal of life. Men come to feel that the life of culture is worth while for its own sake. Scholarship, philosophy, and poetry become cultivated, not merely as adjuncts of social and political efficiency, but as constituting the ideal pursuits of man. The leisure class comes under the spell of the learned ideal, according to which the highest end of all endeavor is to know, or the ideal of the artist, who gives himself wholly to creating and enjoying the beautiful. The endeavor to pursue those ideals involves a large labor of preparation, which the school has historically not given in the form of the game.

The game antagonized by non-social and ascetic tendencies

Especially did the learned ideal tend to eliminate the game from the school. For it is not strongly social in character, and, since the game finds its leading value in developing social aptitude, the man who looks to knowledge for its own sake as the end of living is apt to discredit an agency that distracts from his absorbing pursuit and cultivates qualities that to him have no essential value. This tendency on the part of those who represented the learned ideal appeared among the ancients in their philosophic schools, and became further emphasized by Christianity. For Christianity not only sanctioned the tendency to pursue learning, giving it a religious interpretation, but it also, finding the goal of this life in the life to come, made salvation in that other world depend on a discipline that had no reference to earthly efficiencies, unless we except moral ones. Even the moral virtues that it exalted were largely negative, the only important positive one being that of an indiscriminate and unscientific charity. Thus the indi-

vidual was thrown back upon himself. The inner life, to which he and God alone had direct access, became the all-absorbing drama that seized his attention. He had little use for play, which makes us worldly and cultivates a social efficiency that has no relation to the soul's salvation. Hence the hermit, the solitary cell, the vows to silence. In such practices they strove to assure to the soul its chance to grow up into the knowledge of God, and into immortality.

When we add to the individualism of the learned ideal and of the medieval Christian conception of salvation the asceticism that came from the supreme valuation of the spiritual and the fear of the contamination of the earthly, we have an array of forces before which the game went down as a factor in education. It was seductively pleasant, worldly, social. The spirit of the time feared all these qualities. The military aristocracy of the Middle Ages developed from primitive forms an education of games, infusing it with Christian elements, but learned education has waited until modern times for any adequate recognition of the value of play.

Reasons for the revival of the game in modern education. (1) Necessity of emphasis on interest

The causes for this revival of the game as a factor in consciously controlled education may be summed up under three heads: (1) the recognition of the importance of interest as a feature of educational method; (2) systematic training of very young children; (3) a larger conception of the scope and function of the school. We shall consider these factors in order. (1) The emphasis upon interest was due to a constantly increasing sense of the barrenness of school work so long as the motivation was left to take care of itself, or limited to compulsion. The coercive resources of the master failed to keep pace with the drudgery of the school. The Renaissance made literary education quite common for the upper classes. But, given as it was in the ancient tongues, it required long labors. Many teachers found that these could occasionally be lightened

by the introduction of games. Thus the Jesuits employed *concertations* for the same reason that old-fashioned country schoolmasters used spelling matches, and modern ones may use card games to teach arithmetic. The work of the school was put in the form of a game of rivalry.

Rousseau and freedom in education

It is, perhaps, due to Rousseau more than to any other man that modern education feels the necessity of interest. His revolutionary protest against the arbitrary enslaving education of his time may be regarded as the great "Bill of Rights" of the child, a proclamation that has come to have universal acceptance to-day, not because we entertain his extravagant notions of the perfect nature of the child, nor even because of our eagerness to yield to the child his rights, although this feeling is, to say the least, pronounced, but rather because we feel that without interest we fail to get satisfactory results for the time and effort spent in teaching. The educational platform of Rousseau would justify play as practically the sole method of education. Hence Basedow, the follower of Rousseau, utilized it freely in his Philanthropinum.

Play not the only source of interest

The critics of educational reform have often identified the program of interesting the child with a transformation of school activity into play. Such a belief is unwarranted. The emphasis on interest leads to the introduction of play, but it does not follow that only through the game can the work of the school be made interesting. The Herbartians make interest the foundation of method, but they have never regarded play as the only, or even the leading, phase of school activity.

(*c*) Systematic education for young children and play

(2) The development of systematic school training for very young children makes the use of the form of play in school work practically inevitable. On the one hand, their lack of experience makes it difficult or impossible to invoke any motives save those of play or of arbitrary coercion, and, on the other, the play motive seems adequate to secure such persistent

effort as the child is at that age capable of putting forth.

Controlled play

Nevertheless, the kindergarten, as Frœbel conceived it, and as it is conducted by the best of his disciples, is not a place for mere uncontrolled play. Frœbel was far from agreeing with Rousseau that a child would develop himself properly under the stimulus of his own spontaneous impulses. The prescriptive and the mandatory elements in education are, indeed, proscribed by Frœbel. They reappear, however, in the form of a negative control that he advocates. The teacher must everywhere consult the spontaneity of the child, but when these budding tendencies lead into dangerous directions, there must be, he maintains, an unhesitating repression, and the discipline of natural consequences is to be supplemented very materially by arbitrary condemnations and punishments meted out by those who have the child in charge. Thus the Frœbelians advocate, not purely spontaneous, but rather controlled, play.

(3) The larger education and play

(3) The third influence leading to the modern revival of play as a factor in education is the growth of a larger conception of the scope and function of the school. From being simply an institution to teach literacy and to transmit the content of learning, it has come, owing to the development of democracy, to concern itself with civic training, with vocational training, with health, and, indeed, with all that tends to make the individual more efficient and more happy. Many of these larger aims can be very directly reached through education by play. This is especially evident in the case of health. It is interesting to note that physical culture is more and more betaking itself to play, as a better method of getting results than the earlier routine gymnasium work. Moreover, the schools of the people are beginning to recognize, as the schools of the aristocracy have always done, the importance of student social life as an agency in the larger preparation of the youth

for his future. We are coming to feel that clubs, societies, and student enterprises of all sorts are not to be regarded simply as incidents to the school life, of no concern to the school authorities, save as by their excesses they create problems of repression. On the contrary, they constitute a phase of school activity quite as important as that central core of systematic studies upon which hitherto so exclusive an emphasis has been placed.

Summary

In résumé, we note that throughout history the game has been intimately associated with the ethical and social education of men. In this service it has allied itself with religion. It is a form of education that has been especially prominent in the culture of free aristocracies. On the other hand, the evolution of craftsmanship has involved the development of apprenticeship or of vocational education through work. The development of written language and the accumulation of learning, with a consequent increase in the labor of preparing for social and political efficiency, caused the coercive factor to appear in liberal education. Work appeared at first incidental to the larger play life of the school, but ultimately became the predominant feature therein. The growth of the learned ideal and of Christianity practically thrust the game out of the education of the school. In modern times it has again come forward as a means of making school work interesting, particularly to young children, and as the natural method of cultivating the health and the civic and social efficiency that have come to be such important factors in the aim of education.

Section 46. *Play in the education of the future*

The function of play in education may be regarded as one of the unsettled questions. Schoolmasters are still divided both in their theory and in their practice. On the one hand,

Two views as to the proper attitude of the school toward play

we have these who, inclining toward the theory of Rousseau and Groos and the practice of Frœbel, are wont to advocate a general transformation of school work into play. In such activity, they think, Nature has provided a "royal road" to that which has in the past cost many pains and tears.

On the other hand, we have those who, without going to the extremes of asceticism, regard play as not only incapable of preparing for efficient living, but as an activity against which the school that does good work must be constantly at war. They note that the power which separates the savage from the civilized man, the ne'er-do-well without capacity for sustained effort in any field from the man of effective energy, is capacity to bring his spontaneous impulses under the control of a coercive purpose, to work. They are convinced that extensive indulgence in play will impair the power of self-control necessary for persistent labor. Many doubt whether play possesses any educational values that are not to be gained by the far more helpful and far less demoralizing activity of work. Hence, schools have on the whole discouraged the play spirit, and have striven to interpenetrate their activity with the serious, coercive, and remote aim of education. Play has been tolerated only because it could not be entirely suppressed. The margin of time for such free activity has been cut down to that minimum beyond which it would seem that coercion cannot go. Or, if a more liberal view prevailed, it was held that play might be tolerated as a means of rest and recreation in the breathing places between the really serious labors of education.

Abandonment of play by both vocational and liberal education

It is probable that the view that disparages play is not the only one that involves error. The study of the games of children and of the history of play as a factor in education suggests that, although this activity has extraordinary value as an educational agency, it yet has certain limitations. It

is noteworthy that wherever there has appeared a form of physical or mental skill the mastery of which involves persistent effort, there the game has been abandoned as a means of preparation. None except the simplest vocations have ever been maintained by an apprenticeship consisting to any considerable extent of play. Moreover, the development of written language and a mass of learning has placed liberal education in a position in which it has not been able to trust its fate to playful social intercourse, even when a measure of supervision has been exercised to curb excesses and to direct the "spontaneity" aright.

Criticism of reformers

The believers in play will urge that the reason why it disappears in these educational emergencies is not because it is incapable of affording instruction in any form of skill, however elaborate, but rather because the schoolmasters have not been clever enough to put their instruction in its forms. They have gone on trusting to direct coercion as the simplest method of bridging over any difficulty of attitude on the child's part. But, according to the reformer, here as elsewhere the most direct route has not proven the shortest, and the school has failed of results for lack of *finesse* in methods.

Two problems in regard to the part of play in education

In the minds of some educational reformers, then, play appears as the universal method of motivating the difficult tasks of the school. But this is only one phase of the problem of play in education. Any question as to its value for this purpose should not blind us to the fact that it has been from time immemorial the natural method of social and ethical training, and that it possesses peculiar advantages as an agency for such culture, particularly in a free community. The endeavor to forecast the part of play in the education of the future involves, therefore, two problems: (1) in how far can play be used to motivate difficult school work? (2) to what extent should the school take seriously and assume control

over those play activities which originally were the whole of liberal education, although with the development of the more laborious phases of culture they have come to be regarded as subsidiary?

(1) *The love of play as a school motive*

Ambiguity in the meaning of play

Any discussion of play as a means of motivating difficult tasks is likely to become entangled in conflicting conceptions of its meaning. If, on the one hand, we think of play as activity pursued for its own sake, then, since a definition can be converted simply, we must believe that every activity that pleases without reference to results is play. Hence it would seem that as soon as the tasks of the school are made interesting to the child they cease to be work. On the other hand, some mean by play that which has no utility. Work is serious, they think, but play has no value except that of the pleasure one gets out of it. On this view, if an activity can be regarded as educative, it in so far ceases to be play and becomes work. The school, therefore, can have no place for play in the proper meaning of this term.

Definitions of work and play

Both these notions appear in everyday discussions of the subject. The contradictions that they involve are, however, to be dispelled if one strives to discover the underlying truth in each view. We may admit both that work may become so interesting as to fascinate without any thought of its utility and that play may gain results of the highest utility, yet it is possible to make a working distinction between them. The definitions given in an earlier section[1] may be taken as a fairly logical statement of the practical meaning of each. Work is activity which, whether we like it or not, we must enter upon because of its consequences. If the coercion is not in

[1] Compare p. 315.

the foreground, at least it is in the background. Play, on the contrary, whatever its utility, is felt to be a matter of free choice. We can play or not as we wish.

Differentiation of child activity into play and work

With such a definition as a basis, it becomes evident that, if the play of the child becomes suffused with the sense of a higher coercive force that compels its continuance, even though the caprice of the moment would lead elsewhere, it is transformed into work. The early activity of the child, which is pure play, becomes under the influence of the growing appreciation of the "must" and the "ought" differentiated into two parts. The one has utility for the larger purpose of life that he is beginning to realize. He may or may not like it, but he cannot avoid it and satisfy his judgment and his conscience. The other is not felt to be so important, so inevitable. It retains, in some measure at least, the old spontaneity and freedom of the earliest life of the child. He may realize its value, yet he does not regard it as necessary. It is what we may very properly call play, although we make many distinctions, graduating such pursuits in relative importance according as they seem to bear on the more serious phases of life and involve a greater or less amount of incidental work.

Need of cultivating the spirit of work

The school would seem to find it necessary to recognize this distinction between work and play, instead of striving to obliterate it. An attempt to motivate school work by turning it quite generally into play would seem to fail of introducing the child into an appreciation of the fundamental values that drive civilized man to work. Among the attitudes that it is especially important that the school should cultivate in the pupil is that of submitting himself to the patient industry, the persevering effort, that make up what we may call the spirit of work. The school life of the child should naturally, but inevitably, introduce him into the distinction between the vocation and the avocation. It should teach him to love his

work, it is true, but not by turning it into something which is not a genuine task.

Coercive influences turn play into work

At this point the objection may be made that not even so radical an advocate of the spontaneity of the child as Rousseau has ever held that he should be continually shielded against the coercive necessities which stimulate to work. To argue that the school should teach children to work is to waste words, for no one seriously thinks otherwise. Nevertheless, it will be admitted that the attempt to motivate school work by giving it the form of play has been and still is one of the commonest of the manifestations of the spirit of reform. The reformers themselves never make the mistake of supposing that the child is to be permitted to retain the play attitude. He is to be interested in the work because it seems like play, but, if interest lags, he must be compelled to play. Such coercion may well cause the child to feel that the play form is merely a pretense. And, if the reformer in an endeavor to avoid the need of coercion seeks some new game, that by its interest may lull to sleep the suspicions of the child, he simply plays at hide and seek with that necessity which his pupil must ultimately discover behind all his seductive forms. Sooner or later the stark outlines of duty must appear, as the genius whose tyrannical spirit dominates work, whether in the school or in life.

Need of preserving the distinction between play and work

However, the reformer will urge that he does not intend to conceal duty from the child. His design seems to be, not to abolish work, but to lead up through play to such an appreciation of the meaning and the grounds of duty as shall make the child give in freely his devotion to that stern ideal. In this plan the partizans of progress may well wish him Godspeed, but one should take account of the fact that it contemplates a constant widening of the gulf between work and genuine play as the pupil grows older. This gulf should be recognized.

It is one thing to say that with little children education should be largely through play, and that this should be the pathway of approach to work, and another to maintain that there need be no fundamental distinction between them. The latter inference is unfortunately apt to be drawn when one speaks of play as the means of motivating the difficult tasks of the school.

Not only should the school teach the spirit of work as contrasted with that of play, but among the things in which it must give instruction are forms of physical and mental skill that could not be learned except by such prolonged and laborious effort as must of necessity involve a powerful coercive motive. It is, perhaps, impossible to demonstrate that free play could not suffice to lead children to master the reading, writing, mathematics, etc., which our civilization deems essential, not to speak of vocational training and of the higher phases of liberal culture. It is, however, certain that no school has made more than a feeble attempt to get these results by play. Historically the appearance of such studies has not only introduced work but, as we have seen, tended to drive out play. It is the latter unfortunate fact which has led to the view so commonly held that play is of no real importance in education.

Bad results of the uncritical use of play as an educational method

We may say, then, that the uncritical resort to the play motive has three bad consequences. (*a*) It fails to differentiate between what play can and cannot do in the school. The conception of play is not properly defined, and it is taken to mean any work in which the child is interested as well as genuine play. (*b*) The general public in criticising the efforts of reformers, and the disciples of these reformers in attempting to carry out their ideas, are apt to conceive of play in the ordinary sense, as activity which the child engages in merely because he likes it and without any appreciation of an ulterior

utility. The result is that the public regard with suspicion the "sugar-coated" education that they think has been introduced, and the teachers only too often give a ground for their suspicions by sedulously avoiding any coercive motive for fear of interfering with the freedom of play in the child. (*c*) The emphasis upon play as a device of method distracts attention from the far more important task of organizing the genuine play activities of children in such a way as to get from them the best educational results. The play of the small child leads into both the play and the work of the older one. The important thing is not that when work appears it should be indistinguishable from play, but rather that the play that persists should be carefully guarded as an educational force.

Four leading school motives: — (1) Play as the child motive

It is evident that, while the love of play is a legitimate school motive, it is only one among many. A rough classification of the kinds of school motive yields four types: play, the desire for approval and the fear of criticism or punishment, utility, and the love of knowledge or skill. In general, the play motive is adapted especially to children up through the kindergarten. It continues to be a prominent interest all through the school period and, indeed, through life. However, it is even in the kindergarten beginning to be supplanted by social pressure. The desire to be approved must be evoked in order to insure whatever of sustained effort this early stage of culture demands. Coercion has, it is true, been in evidence from much earlier in the child's life. It has, however, been directed rather toward negative than positive results, — to prevent the child from doing undesirable things, rather than to keep him at tasks. The pressure of social standards driving them to labor is with most children to-day first felt in the influence of the schoolmaster.

The appeal to the child's desire to get on well with others, which may be briefly designated as social pressure, is the

"working" motive of the school. When all other motives fail to reach the pupil, this is trusted as a never failing resource. To it the master resorts in order to bridge over the transition between a period when a certain motive is on the decline, and one when another motive is strongly felt. It serves as an introduction to subjects the utility of which the child is as yet unable to feel. It keeps the child at work when his own pleasure or his judgment of the value of what he is doing begins to lose its stimulating power. It is not only the "working" motive but, indeed, as many have felt, a sadly overworked one

(2) Social pressure as the "working" motive

Social pressure is, perhaps, the most powerful force in adult life, and it is well that the child should become acquainted with it early in his school career. It is probable that the kindergarten child is not too young to be driven to work by it. Throughout that age of rivalry in which the games of individual contest appeal most strongly, social pressure, as embodied in the will of teacher and supported by that of the parents, is the natural and effective force that supplements the interest in play. There comes a time, however, when with many, if not with most, children school work must be justified by other reasons than by the fact that success therein is the only road to the favor of those in authority over them. The causes for this change in attitude are many. Since a large number of children are not especially successful in their school occupations, they do not find them an avenue to a social distinction that seems worth while. They get used to being commonplace or to failing, and the social pressure that is continually directed toward making them do better loses its sting. Again, the children in their wider intercourse with schoolfellows and with society outside the school come to realize other forms of social pressure besides that emanating from the teacher. To be successful and admired among certain groups of children,

Rebellion of the adolescent against school coercion

and even of older people, the boy or girl finds that clever evasion or an open disregard of the will of the teacher is the surest method. Parents and teacher often differ as to what sort of conduct is desirable, what should be studied, and how much effort should be put forth. Most important of all, a developing realization of the larger life, for which school is supposed to constitute a preparation, causes the child to question the values of what he is required to learn.

(3) Need of an utilitarian defense of school work

The period at which the girl or boy begins to reflect upon the relation of the school work to that sort of life which he or she admires is the most critical epoch in the course of education, so far as motivation is concerned. If the earliest period in culture can be trusted largely to play, and the middle period largely to social pressure, the onset of adolescence makes necessary a sound and complete defense of school studies on the ground of utility. It is here that most children tend to drop out of school, and, unquestionably, not solely because of poverty, but very largely because the work that is offered them in school does not suit their capacities and needs. To children who cannot get on in school, its training must inevitably seem of little value, but those who can succeed in the course of study are not infrequently found to be discontented with it on the score of its utility. That the adolescent should question the value of what he is asked to do is an eminently healthy attitude. It is unfortunate for him if he do not feel that what he is learning should lead somewhere in the great world of adult activity, and if he be not disposed to call into account whatever he is directed to study from the point of view of its ultimate value. Only through such criticism can he escape mere passive dependence upon the standards and the awards of certain authoritative persons and rise to real freedom. Many cases of success in school and failure in life, or of the reverse, are, doubtless, due to the fact that in the former environment submissiveness

is, on the whole, a valuable quality, whereas in the latter a premium is placed on independent enterprise.

(4) The academic or "teacher's" motive

The motive of study that appears in pure love of learning or of skill may be called the academic motive. The play motive is primarily the child's motive, social pressure is the "working" motive, utility the worldly or universal motive, but the academic motive is the one most beloved by the teacher. It may with justice be called the "teacher's" motive, for men and women whose lives are spent in investigating or transmitting truth are apt to value that which it is their main concern to give as worth while in itself. To the teacher learning is usually first, and its application a secondary affair. In endeavoring to respond to the challenge of the world he may seek out an utility for the learning that he transmits, and he may bow to the inevitable and limit himself to teaching the world the useful, because instruction in that alone will yield a living, but always he feels and strives to make his pupils feel a pure love of knowledge or of beauty, which is after all in his estimation the highest motive to which his profession can appeal.

Force of the academic motive

It is to be noticed that the academic motive is a real force with many children, especially with those who succeed well in study. One comes to love what he can do well. Many children pass easily from the stage of learning under social pressure to a stage of absorption in learning or in artistic creation without reference especially to the distinctions that can be won through such pursuits. An omniverous appetite for knowledge in any or all fields seizes the adolescent. A holy devotion to the pure ideals of art, that makes one idealize poverty incurred in their service, is common enough an attitude to the youth as well as to the man.

Its relation to play

The academic motive is founded on instinct. The instinct of curiosity which constitutes so fundamental an agency in driving us to accumulate experience for future emergencies

lies back of the scholar's love of learning. We may add to this the mere fondness for activity, physical and mental, which is so prominent in the earliest games of children, and that love of harmony which appears as soon as the child's imagination begins to waken. Thus the teacher does not need to manufacture the academic tastes, for they grow out of the simplest factors in the nature of the growing mind. In fact, the academic motive is the one most definitely continuous with the play motive, and most intimately related to it throughout life. Both involve the love of activity for its own sake, and, although the academic motive can with its devotees coerce labor quite as effectually as any other, it is yet by the world at large associated more closely with the freedom of doing what one wants to do than with the necessity of doing what must be done.

Possible interference of the academic motive with efficiency

Thus the academic motive need not wait until the child becomes an expert in any field. It may be gradually nourished, and it is to be hoped of every child that he will grow from the simple curiosity and love of harmony of his earlier years into a catholic interest in the knowledge and the art that have come to us from the ages. On the other hand, when the time comes for the youth to begin to look toward a vocation, it is unfortunate for him if his love of the ideal pursuit of learning or of art obscures completely a sense of the utilities of life. The teacher's motive may do its work too well. It may be the parent of a devotion to other dreams than that of service, and so, instead of stimulating, it may paralyze efficiency. Herein lies the justification of that complaint so often made by the man of the world against the school, that instead of preparing it unfits for life. Herein also lies the cause of so much discontent with the school on the part of the children who feel the call of the world, for to their insistent utilitarianism it responds with an academic attitude which is as a stone to one asking for bread.

Summary

We may sum up this discussion of the love of play as a school motive by reiterating that play, as ordinarily conceived, is incapable of giving the spirit of work and of holding the child to such tasks as are necessary in order to acquire the knowledge and the skill requisite either for the standard liberal culture of to-day or for any skilled vocation or profession. Hence, as the child grows older, coercion must appear and be felt. The coercive motives that lead to work are social pressure and utility. The former is easily applied when the school atmosphere is such as to give to the teacher authority. It fails, however, as the child grows out of the age of rivalry into that of independence. At this juncture it is necessary that it should grow into and be supplemented by either the utilitarian or the academic motive. It is well if the transition from social pressure into these be so cleverly continued that the child never feels the constraint of the school to have been arbitrary. What teachers have approved drifts insensibly into that which is seen to be rationally best, because it suits the necessities of the larger life of the world or of the youth's inner nature.

Meantime, the play of the younger child should not have disappeared out of the education of the older one. As lacking in the deadly earnestness of the work of the school, it should come to be felt as subsidiary, yet none the less it remains, from the point of view of life as a whole, an element of prime importance. Here the social, the æsthetic, and the intellectual interests can thrive in the most stimulating atmosphere. Here the academic motive can grow strong by the mutual support of those who entertain it. The play life of the school is its life of free individuality, and from free individuality springs all devotion to ideals.

(2) *The organization of play as an educational factor*

Importance of genuine play as an educational factor

It is important to realize the limitations of play as a substitute for the difficult tasks of education in order that the way may be opened for a clearer apprehension of the desirability on the part of the school of a more elaborate organization than at present exists of the genuine play of childhood and adolescence. The discussion of this subject may be broken into two parts. First, we may consider the educational value of this genuine play as contrasted with the work, which with the growth of a sense of responsibility in the child constantly becomes more absorbing. Second, it is an open question to what extent the school can profitably take a hand in the organization and control of play activities.

Contrasting ethical and social qualities cultivated by play and work

When we compare the educational results of play and work, we notice that the former is more effective in two particulars. It cultivates certain social qualities, certain ethical virtues, far more effectively than does work, and it is especially valuable as a means of stimulating that rational attitude which we have called originality, or initiative. The virtues that play calls into activity are especially such as involve familiarity with the feelings and attitudes of others and the power of adaptation to social situations. Courage and confidence, tact and consideration, ability to coöperate, and a sense of the power that comes from this source, leadership, loyalty, and altruism, — all find in the intercourse of the game, or of such activity as may be classified as play, favorable opportunity for development. On the other hand, the virtues that work cultivates are especially obedience, patience, perseverance, and industry. Finally, the contrast between work and play develops the sense of relative values upon which it is founded.

It is not meant that either play or work cultivates one set of virtues to the exclusion of the others, but that each furnishes

the most effective environment to cause certain traits to flourish. The especial value of play as a basis of social culture arises from the fact that games depend so largely upon the social instinct for their interest, and partly from the great variety of social situations that the freedom of the game permits and fosters. In work the social attitudes are as a rule more restricted and permanent in character. In play they vary with surprising rapidity. If one fails to excel in one sport, he may try another. In the revolutions of position that the fortunes of one game or the shifting from one game to another involve, each usually finds himself with an opportunity to display whatever social talent he possesses. Moreover, the group games depend upon the coöperation of the individuals who take part. If one leads, it is because the others are willing to follow. If all are not content with the rules and the conditions of the sport, it cannot succeed. The game is democratic, and affords an opportunity to the individual to exercise such a variety of powers and functions as to give great social adaptability.

Play and the culture of resourcefulness

The same freedom that makes the game so serviceable for the cultivation of social skill renders it valuable as a means of developing originality. Here, doubtless, we find the reason for whatever truth there is in the proverb, "All work and no play makes Jack a dull boy." In play new situations arise with great frequency. The democracy of the social relationship gives each one a chance to show what he can do, and often such chances will be taken with great gain in confidence. Thus the habit of casting about among one's resources for a solution to a difficulty is cultivated. It must be noted, however, that many children get into the habit of relying on others for these solutions, and that the coöperative character of the game renders such an attitude quite easy to assume. Nevertheless, the game is probably not so likely to cultivate

passivity and subserviency as work, just because the latter is a matter of coercion while the former is free. The variety of social changes that play presents can scarcely fail to thrust upon the attention of each individual the advantages of independence and resourcefulness. If he does not develop these qualities, it is not for want of an opportunity, but because he does not possess them. Work, on the contrary, is apt to cultivate the tendency to imitate and to obey, to control one's self in the service of a rule and a standard that comes from without. Only when through the skill of the teacher it takes the form of problems, does it directly aim to lead the child to be original. When this is done, the insistent character of the situation gives it an advantage over play. If the playing child does not rise to the situation, he may satisfy himself by regarding the whole matter as of no importance. The general seriousness of work tends to remove the possibility of this attitude. On the other hand, play makes up for its feebleness in coercion by the abundance and variety of the situations that it offers.

Superiority of the serious problem for this purpose

If it be granted that the activities of play afford a special opportunity for the development of social adaptability and resourcefulness, it is plain that the schools of a democracy cannot afford to neglect them. At present, however, the emphasis tends in the other direction. The nineteenth century, with its popular systems of education, may be said to have practically solved the problem of literacy for the masses in the progressive nations. But universal education has meant a school for those whose lot in life is not leadership nor leisure, but breadwinning, usually by methods involving much manual toil. Having solved the preliminary problem of literacy, education is now turning more and more to that of cultivating vocational efficiency. It is natural, therefore, that the school, particularly the free school, should be infused with the spirit of toil,

Absence of play in democratic education

and that, in the endeavor to hold the children who are so apt to leave as soon as the law permits, it should be striving to appeal especially to the sense of utility in them and their parents.

Especial need for its presence

But while, on the one hand, modern conditions have tended to universalize the demand for vocational education, they have also, on the other, created a need for the liberalizing forms of culture in the emancipated masses. The problem of the relation between liberal and vocational education will be attacked later, but it is in place here to note the importance in the new scheme of universal education of activities which are essentially forms of play. For such activities have been found to be peculiarly fitted to cultivate social resourcefulness and efficiency, qualities especially necessary in a democracy, where the individual is not bound to the status of birth, but is thrown on his own responsibility to find the place that his talents and his energy entitle him to occupy. To lead when leadership is one's appropriate function, to follow without subserviency when others are from talents or fortune put in position to control, to be always ready to utilize one's resources when the opportunity comes, — these are qualities that are especially valuable in the life of a democracy, and they are qualities that are nowhere better cultivated than in the game. Hence this phase of the life of the child, crowded out of the curriculum on account of its apparent lack of utility, should again find entrance because of its relation to that social flexibility which has become so necessary for all.

Modern endeavors to make an educational use of play

Among the phases of this modern endeavor to utilize play may be mentioned the development of gymnasiums and school playgrounds, the appearance of teachers of physical culture and directors of athletics, the encouragement and growth of systems of student self-government, the fostering of all sorts of subsidiary student enterprises, as newspapers and

periodicals, religious, literary, scientific, and social clubs, the establishment of recreation centers, such movements as that of the Young Men's Christian Association, involving a variety of physical and mental sports together with educational features in addition to religion, the development of school excursions and summer camps, and the reorganization of elementary education so that social activity, much of which is play, may be made more prominent, as has been attempted in the Experimental School at Chicago. In all these developments the principle that play, in order to produce its best results, needs a large measure of adult encouragement and even adult organization and control is illustrated. The child needs to be taught to play as well as to work. Gymnasiums without instructors lie unused. School playgrounds without directors become the scene of mere random intercourse, such as scuffling and rowdyism. If such things are true of apparatus and provision for physical sports, much more true is it that mental games require assistance from the instructor. Children teach each other to play, but beyond a certain point all progress in the game depends upon adult interest and influence. The game does not evolve into a better instrument for education unless such adult influences are brought to bear upon it. Of course, this need of the support and advice of elders becomes less important as the child grows older. However, even the games of adults need careful watching lest pastime prove mere waste time, or, worse, time for degeneration.

Need of adult control

This supervision on the part of the school will, doubtless, as time goes on become increasingly important. As a nation we shall be taught how to play as well as how to work. By wise control many institutions of school life that are commonly regarded as objectionable may be utilized. The fraternity is an example. Unregulated, it is often a school of

snobbishness, of idleness, of dissipation. On the other hand, it can be made a source of social culture and of inspiration scarcely less valuable than the regular studies of the curriculum. If the former objectionable features can be warded off, a great agency for education is saved. The "let alone" policy here, as with other playful activities, is not the only alternative to complete suppression. There are methods of regulation that do not destroy the essentials of control by the students. These methods have not been perfected, — indeed, very few have even been tried. It is a safe prophecy that, when the school authorities come fully to realize the importance of these student activities, they will not find the problem of regulation insurmountable. For it is not the impossibility of regulating play while preserving its playfulness that constitutes the fundamental difficulty. It is rather the failure on the part of the school to recognize the value in education of anything aside from its prescribed curriculum.

Practical consequences of an adequate use of play in education

Four practical consequences of the assumption of responsible control over play by the school may be distinguished. These are: (1) the lengthening of the school day; (2) far more elaborate development and supervision of playground activities, club life, and pupil organizations of all sorts; (3) the correlation of these play activities with the work of the school; (4) the growth of the school into the intellectual and social center of the community, by enlisting the coöperation of parents in the play activities, with a consequent transformation of the avocations and of the social and political activities of the adults in the school environment.

(1) Supervised play and a longer school day

(1) The city school seems to be drifting in two directions; toward a shortening of the program of study and recitation, and toward the establishment of supervision over recreation. The growing conviction that children are kept at their tasks much longer than is necessary to accomplish the desired

results and that time is wasted in constraint without achievement might easily result in a much shorter school day, were it not for the problem of the occupation of the children for the rest of the time. On the farm this would have been an easy task. In the city of to-day it is quite a different matter. The advocate of the niggardly policy in the support of the schools might welcome the shortening of the working day, if he were not at the same time facing an inevitable increase in the expense of supervising the playground activity. Such additional expense we may confidently expect, not only in the city but in the country. For while the city needs supervised play to keep the children from degenerate social intercourse, the country needs it to supply a deficiency in social life. The character of the play activities as well as the hours that are devoted to them might well vary according to the character of the community, but that great movement for the utilization of play which is rapidly sweeping over the cities must inevitably affect the country school as well.

(2) Expansion of the program of play

(2) The play life of the school should aim at all the leisure interests of life. There should be organizations for athletics, social companionship, literary and artistic enjoyment and creation, the drama, intellectual investigations, excursions and travel, self-government, and political and social betterment.

Transfer of school studies to the play program

Such organizations would inevitably trench considerably on the work done in the regular curriculum of the school of to-day. This result is to be welcomed. If the work of the school belongs to the play of life, it is not properly placed in the curriculum. A very large portion of the literary and artistic study of the school is most clearly better suited to what may be called its play life, and could be more effectively cultivated therein. The same thing may be said of much of the history, science, and mathematics. The control of such work can probably be most effectively intrusted to pupil organiza-

tions over which the teachers exercise a more indirect control than over the tasks of the schoolroom. In this way some pupils may learn less science or history or literature, but many, if not most, will learn far more than they do to-day.

(3) Motivation of school work through relation to the play program

(3) The play life of the school will lead into the avocations of the man. But it is what man does aside from his vocation that determines the tastes, the needs, the standards of life of the community. These standards, as we noted in discussing the general theory of play, create the vocations. So, too, in the school, the play life may be trusted to create demands that will motivate the work done in the classroom. Thus the curriculum may be made to have a double utility to the child. On the one hand, it may bear directly upon the adult vocation toward which he is eagerly or anxiously looking; on the other, it may be correlated with the avocations which absorb continuous interest. When these avocations are lifted into importance by careful organization and supervision, they may become a far more stimulating source of motive than is available to the schoolmaster to-day.

(4) The play of the school as a center of community life

(4) If there is any activity in which adult and child meet on common ground, it is that of play. The school cannot engage the inspection nor even the interest of parents in any exercises so well as in those show performances that are not its work, but only its sport. The adult cannot be expected to go to school to work. He can easily be led to go there to play. The proper development of this phase of school life would mean the creation of a social center to which the child who has left school and entered his vocation might continue to resort. In its activities the adults of the community might be led to take part. Thus both in the country and in the city the school might become the intellectual and social center of the community, and give that unifying spirit and that comprehensive interest in all phases of life which the

churches, on account of denominational strife and exclusive interest in spiritual salvation, have often failed to render. Such participation on the part of the adults in the avocations of the school would make it possible for education to affect the inner tastes and standards of the community, and thus to control the social conditions from whence arise the demands that it exists to supply. Instead of trusting passively that its graduates shall carry out its ideals in a strange and hostile environment, it might retain its grip upon them. Certainly one step in the process of making the school like life is that of making life like the school.

PART III

THE EDUCATIONAL AGENCIES

CHAPTER XIV

ANALYSIS OF THE EDUCATIONAL AGENCIES

SECTION 47. *The educational institutions*

Social institutions and the curriculum as the educational agencies

THE educational agencies may be classified into the educational institutions and the educational materials, or the course of study. Both of these are properly to be regarded as agencies, or active forces in education; for while we may naturally think of the curriculum as being passively taught, in contrast with the institutions, like the family and the school, which actively teach, nevertheless, a more careful analysis will show that both agencies are essentially the same in function. They are both directive forces in education, and they make up that educational environment into conformity with which it is the function of the educational process to bring the body and the mind of the individual.

The institution as a course of study

In truth, an institution might, without any departure from essential fact, be called a course of study. It consists in a group of standard forms of conduct through which society performs one great function, or, perhaps, several associated ones. Originally, the curriculum of a normal education consisted in simply learning how to live in conformity to the prevailing institutions. Social heredity clustered about social organization, and the child was educated only by a sort of apprenticeship in the social life of the adult. The course of study, as distinct from institutional life, originates in the separation of some habits and ideas such as the primitive child learns by merely taking part in the ordinary life about him, and their incorporation in a compact form in the instruction and practice of

Rise of the curriculum

a special phase of life, — that of the school. This curriculum has been enormously expanded until it has seemed to include very much that has little, if anything, to do with the actual practices of institutional life. However, this does not vitiate the fundamental proposition that the course of study in the largest sense is the material of social heredity, while an institution consists of a special body of this material of habits and ideas in active operation among the individuals of a group to fulfill one of the great functions of society.

The family and the school as especially devoted to education

It follows that all the institutions of society are educative. They consist of practices which the child observes, imitates, and eventually embodies into the groundwork of his own conduct. Some institutions, however, since they have most to do with the child, are especially concerned in education. These are, of course, the family and the school. The latter arises in the course of that differentiation of functions in society by which the various institutions are separated, and, since it is concerned solely in the function of education, it gradually absorbs more and more the educative function of the others.

Part of the church, the state, and the vocation in education

Incidentally, the state, the vocation, and especially the church are concerned quite extensively in the work of education. The religious institution must of necessity devote itself largely to an endeavor to mold the attitudes and beliefs of the individual. It must aim to stir up the religious ideas, feelings, and habits in the young, and to keep them alive in the adult. Hence the church has always insisted on its paramount right in the control of education, and has frequently been successful in its claim, — so successful as to absorb into itself a very large part of the work of teaching. The problems that have arisen because of the identity of interest between the church and the school are many, and a few of them will be touched upon later. The state has been intimately concerned with the religious control of education, and in modern times

its interference has had much to do with the separation of the school from the domination of church or family. The vocation has been very closely associated with family life. Children have tended to follow the vocations of their parents, and they have been wont to receive their vocational training in connection with the rest of the culture that is peculiar to the family relationship. However, just as church and state have broken loose from the family and instituted a special type of culture independent of family control, so the vocation has asserted itself and set up its own educational system, usually one of apprenticeship, which is dominated by the members of the vocation without reference to family connections.

Reason for differentiating the school from the family

Although the family springs into existence as a means of fostering the young, it does not at first assume consciously the function of training them. Nevertheless, fosterage exists, as we have seen, primarily for the sake of education, and the interest that it involves leads inevitably into that activity. By the time this has taken place, and especially before any serious attempts have been made at conscious education, the family has assumed a number of other functions. It has, in many cases, been the unit in political or religious organization, and it remains to-day to a considerable degree an industrial unit, illustrating within itself the division of labor. Moreover, up to modern times this unit has been nearly, if not quite, industrially independent. Possessing all these phases of activity, it is evident that the family could well perform them only in very primitive social conditions. As for education, the parents have, as a rule, neither the leisure nor the breadth of knowledge or of skill to teach a social heritage not readily illustrated in the common activities of the home. Even home affairs involve phases that require too much special attention for the ordinary household to care for them with much success.

Thus the interests of the child demand that the family shall

Assumption of control over the school by the state. Resulting advantages

give up part at least of its educational work and transfer this to the school. If this were all, the school would have remained under the control of the family, as, indeed, it is to a considerable extent even to-day. But wherever the family is not identical with the state, the value of education as a means of social control leads the regnant social institution to assume the supervision of an activity which must be under its sway if its power and prestige is to be maintained. Ultimately, this transference of the educative function from the family to agencies at once more special in function and general in control redounds to the interest of the individual. The stages in this transition are, however, not all marked by attention or service to this interest, and even to-day the question of that assignment of authority in educational matters which insures the greatest benefit both to the individual and to the community is a matter of debate.

Position of the school not yet clearly established

The school is the latest of the great social institutions to become differentiated. Indeed, this process is by no means complete, and we are even to-day witnessing in the changes occurring before our eyes the growth of independent maturity. In a sense, one may say that this growth has reached adolescence, an age when fantastic notions of the need of independence and of the rights of self are rife, to develop later into a saner judgment that recognizes the importance of interdependence and of service. The issues clustering about the question of the position of this newly differentiated social institution in reference to the others will receive somewhat more minute treatment in the following chapter. In the present one, we may note that in the last century the school has advanced into a position of such relative importance as to take its stand beside the family, the church, and even the state, as one of the fundamental institutions of society. Thus the educative function, so primitive as to be the most important original cause

of the evolution of society,[1] and so fundamental that throughout the ages it may be said to have constituted the chief service of society to man, has come at last to such clear recognition that it is intrusted to an institution the sole function of which is to see that it is properly performed.

Coincidence of the complete differentiation of the school and the rise of rational education

The differentiation of the school and its assumption of the general control over social heredity means that society has come deliberately to undertake the task of improving itself through bettering its education. This advance, although not so revolutionary as that earlier transition by which social heredity came to supplement physiological heredity, and largely to take its place, as the bearer of those qualities in respect to which rapid progress may be expected,[2] is, nevertheless, a phase of the most important step in social evolution since that time. For it indicates a clear recognition of the method of evolution by the selection of institutions rather than by the selection of men. When this conception comes clearly to consciousness, that ideal education which looks toward the future, or, in other terms, that rational education which has the paradoxical aim of preparing for the unexpected rises to supplement and, indeed, in some measure to supplant the recapitulatory education that has dominated through the ages of human history. Education, always for the individual a source of change and, we may assume, progress, becomes with the development of recapitulatory education also an agency making for social conservatism, quiescence. When, however, ideal or rational education becomes plainly defined, and especially when society becomes so clearly conscious of its value as to differentiate the school in order that it may assume control over this function, we may say that education has assumed for the race that guardianship of progress which it has always exercised for the individual.

[1] Compare § 12.

[2] Compare § 8.

Section 48. *The educational materials*

Leading issues in regard to the curriculum

Among the many possible classifications of the educational materials, the aim of this discussion will be to select those which are suggestive of the most important problems to-day. Such classifications have, however, an historic significance, which must be considered, since it has a bearing on their present interpretation. Four distinctions in subject matter may be chosen as embodying the most fundamental educational issues. These are (1) the humanities contrasted with the sciences; (2) the disciplinary contrasted with the content subjects; (3) the distinction of academic from practical subjects; and (4) of liberal from vocational studies.

Distinction between academic and practical subjects

Of these distinctions the two latter will be chosen for most extended discussion, and a chapter devoted to each. By academic subjects are meant those pursued merely for the sake of knowledge or of æsthetic gratification without direct reference to the use of the knowledge or of the art in furthering specific practical ends. We have science for science's sake and "art for art's sake." The one appeals merely to the intellect, the other to the emotions and the taste. On the other hand, both may be treated as merely instrumental to the effectiveness of will and thus be converted into practical subjects.

Distinction between liberal and vocational subjects

The distinction between liberal and vocational studies is one that seems evident on its face. However, the word "liberal" has been used in so many senses and the conception of the vocation has been so broadened that careful definition is necessary to get a norm to which to refer variations. In general, by liberal studies we shall mean those that prepare for leadership and leisure, and by vocational ones those that are pursued because they contribute to the making of a living. If we regard leadership as a vocation, the aims are not mutually ex-

clusive. Moreover, as the vocations have become more and more rationalized and made scientific, what has historically been regarded as having value merely as liberal study the present generation has found to contribute to vocational efficiency. Hence, frequently the same subject matter may be regarded as either liberal or vocational or both. The historical interrelations of these two kinds of subjects have been very suggestive, and their proper status may be said to be still a matter of dispute.

Liberal culture as peculiar to an aristocracy. Rise of education for service

We may note in this introductory statement the association of liberal culture with aristocratic life. The word "liberal" means, of course, pertaining to freemen, but the freeman among the ancients was a member of the governing class, *i.e.* an aristocrat. So, too, at the Renaissance the classic ideal of liberal culture was taken up by an aristocracy and interpreted, as formerly, from the point of view of the interests of such a class. This culture was calculated, as our definition indicates, to contribute to the noble and free enjoyment of leisure and to the ability to govern men. It was not yet thought to require any superior skill to serve them. Vocational training was despised as the training of a servile class. Gradually, however, the thought of service has been ennobled. First, it became recognized as possessing moral quality of the highest value, and then, as it grew to be more scientific, this gain in intellectual character completed its title to respect. The final step in the evolution is attained when the function of public control becomes itself recognized as a service and, indeed, as a vocation to be rewarded according to the value of the service to the community.

Disappearance of the struggle between the humanities and science

Important as the distinctions between the humanities and the sciences is and has been, the questions that it involves are rather of historic than of modern interest. At the time of the Renaissance humanism was a reaction against spiritualism. It

represented devotion to the things pertaining to the present world of man rather than to those of the future life with God. Literature and history, art and travel, even science itself, were from this point of view regarded as humane studies. When, however, the humanistic schools, in their endeavor to give their pupils a mastery of the classical culture, degenerated into mere teachers of dead languages, the reaction known as realism made its appearance. Realism is not a protest against humanism as the study of humanity, but rather against humanism as linguistic. Its motto is "things rather than words," and especially "things before words." Thus the sciences, conceived as the study of things, came to be opposed to the humanities. But the study of human nature or of social life, or of history or literature or of art itself may be scientific, indeed, quite as scientific as the study of physical nature. The recognition of this fact has gone far toward rendering the distinction between science and the humanities of less importance than it was.

The humanities as the earliest studies to promote efficiency

One other interesting aspect of this distinction remains. Frequently in earlier sections[1] the point has been made that mankind first directed his intellectual efforts to the mastery of social processes, leaving physical nature to be dealt with by methods to the devising of which the higher activities of intelligence were not persistently applied. Success has, in general, been attained far more easily by the management of men inferior in mind and will than by the attempt to control nature effectively. Even where advances in power over the physical world have been made by scientific insight, the advantages that came from them were as a rule exploited by the social overlords, very much as to-day the inventor is apt to serve the material interests of his business manager rather than his own. In consequence, education and intellectual progress for the

[1] Compare § 14.

ambitious and the intelligent, or what is the same thing, for the privileged class, the aristocracy, has tended to be in the humanities rather than in the physical sciences. The science and art of social control far outran physical science and invention. Although not presenting their lessons in methodical form, the literature, art, history, travel, court life, etc., by which the aristocrat received his education, were replete with practical suggestions as to how best to live in order to carry out the traditions of his stock. Thus the humanities were in essence social science, and this was the science of the privileged class. Modern physical science for centuries after it appeared had not made many inroads into the field of practice, and could not compare with the traditional humane culture as a source of efficiency to any class, especially to an aristocracy.

It is seen that the issue of the humanities *versus* the sciences links itself with that of liberal *versus* vocational education, and also to some extent with that of the relation between academic and practical subjects. The question will, therefore, be resumed as a phase of the future treatment of these latter topics. The issue of disciplinary *versus* content subjects is similarly interconnected with these other problems. We have already considered the history of this question,[1] but it may be worth while to note the alliance between disciplinary study and both aristocratic and academic education.

Reasons for the tendency of aristocratic education to become disciplinary.

Three reasons may be offered for the tendency for aristocratic education to become disciplinary. In the first place, the social training in aristocratic schools is so largely dependent upon the general forms of intercourse which there prevail that the curriculum tends to be regarded as of minor importance both by the pupils and the community. What really counts is that the children should learn how to behave with their peers, how to get on with them, to be imbued with their spirit

(1) Minor importance of the curriculum in aristocratic schools;

[1] Compare § 32.

and ideals, and to be capable of assuming, in consequence, a position of leadership. Thus the child went to the great English Public School, not primarily to become a master of the classical languages, but rather to be trained into an English gentleman. Under these conditions a curriculum the content value of which it would have been hard to defend was, nevertheless, tolerated, partly because it was not regarded as the main thing, partly because it had prestige, and partly because aristocracies are so conservative that they dislike to part with anything sanctioned by tradition. Indeed, they found some value in the ability to use the ancient tongues, in that such a power was the mark of an aristocrat, a badge to be acquired only by the select. On the other hand, the schoolmasters themselves, who could not be content with the view that the curriculum was comparatively unimportant, or useful mainly because fashionable, urged its disciplinary value, and taught it largely with that end in view.

(2) natural association of aristocratic culture with severity;

A second reason for the alliance of liberal and disciplinary education is found in the natural association of both with the ideal of severity. Discipline has always been thought of as the doing of hard things, things that are done, not from pleasure, but from duty, sometimes things that are done just because they are hard and the doing of them is judged to be good for the soul or for the powers of the mind. Now in its beginnings liberal education was typified in that adolescent training which aimed to socialize the individual.[1] An important phase of this socialization was the ordeal, which was supposed to test the ability of the initiate to undergo the hardship and pain that might fall to his lot in carrying out his duty to the society which he was about to enter. Especially when this social education becomes the distinguishing mark of a governing class does it acquire the character of impressing an unusual

[1] Compare § 13.

standard of courage and endurance for the sake of honor and glory. The Spartan, the Roman, the knightly culture savored much of the discipline of severity. Thus it is natural to think that any education designed for a leading class must worthily test the moral and mental qualities by virtue of which they rule. It must be a discipline, a steeling of the soul to heroism.

(3) the aristocracy in need of culture for adaptability

Lastly, we note that liberal education is designed for men whose lives present the greatest variety of emergencies. The governing class needs above all a training that fosters the power to readjust, rather than the mechanical one that fits a man for a specific vocation. The difficulty, already noted, of selecting the content subjects of greatest relative value for such culture as this leads the liberal school to fall back on a discipline that is supposed to train the powers of the mind without reference to the subject matter which is taught. As life is always most complex for those who stand at the front of progress, so the demand for ideal or rational education appears first among the leading classes, and the conception of disciplinary training is, as it were, the *false dawn* that precedes the rise of a liberal culture the *content* of which is adapted to facilitate the treatment of new situations.

Discipline as an utilitarian aim for academic culture

As regards the relation between disciplinary and academic culture, it may be noted that whenever knowledge that has confessedly, nay proudly, divorced itself from practice finds itself in default of any utilities to which to appeal, it usually invokes that of discipline. This defense ordinarily satisfies the critics, and permits academic culture to go on without further challenge. Here the notion of discipline plays its usual rôle as a bulwark of defense for those whose weapons of offense are not of a kind to encourage them to seek battle in the open field.

CHAPTER XV

THE EVOLUTION OF THE SCHOOL

SECTION 49. *The differentiation of the school*

The school a result of the expansion of culture

THE institutions of society are in their evolution subject to the law of differentiation and integration which Spencer makes so fundamental in this process. As it separates itself from the common mass of customs in primitive human intercourse, each of these institutions carries with it the function of educating men in the ideals and practices peculiar to it. The method of teaching is at first simply that of causing the young to take part in the institutional life that is to be mastered. The differentiation of the school is primarily the result of the appearance of forms of culture which institutional life and general social intercourse cannot give effectively or adequately without the aid of some special agency for education.

Adolescent training, written language, and the school.

The school as a cause of better and more culture

We have already noted the origin of the school from the special exercises of adolescence among primitive men,[1] and from the development of written language.[2] The exercises of adolescence were largely the product of a growing conviction that there should be some conscious, specific, and impressive effort to initiate young men and young women into the duties and customs to which they were expected to conform when they assumed full membership in the tribe. The differentiation of this training makes it effective. It also opens the way for an expansion in amount of training beyond what is given through

[1] Compare § 13.

[2] Compare § 14.

merely partaking in institutional life. The exercises have been grouped under (1) ordeals, (2) initiatory rites, (3) drill, (4) instruction in tribal traditions, laws, and beliefs. The two latter factors are especially capable of expansion. In a military society, drill may come to be a matter of several years of training. Indeed, when with the specific military exercises there is joined gymnastic culture preparatory to them, such as we find among the Spartans, the whole may fill the entire period from early childhood to adolescence.

Increase of drill

But if the drill is capable of expansion, the fourth element in these adolescent exercises, viz., the instruction in tribal traditions, laws, and beliefs, is still more potential for growth. With this growth there usually goes the development of a learned class. Since religion plays such an important part in early learning, the learned class is ordinarily a priesthood. This class often constitutes an hereditary caste, as Brahmans, Chaldees, or Levites. It may be even more important in government than the military class or caste, especially where settled conditions prevail, as in China or India, or it may itself be identified with the military class, as among the Greeks or Romans

Increase of learned instruction

The school becomes indispensable as an auxiliary to the preservation of the ideas and practices of a learned class when once this learning becomes embodied in written language. The ideographs of early forms of writing are in the beginning simple, but when they come to cover a wide range of objects the labor of learning a separate symbol for each word becomes enormous. Thus the work of the school accumulates. The very difficulty of this work tends to render learning more and more exclusive, the esoteric property of a learned class, who strive to express its teachings in prescriptions to the uncultured, and who cherish the detail of their culture as the source of their prestige and power.

Learning becomes esoteric

Control of learning by family or caste

The learned class that is thus differentiated may be a governing class or the mere servant of such a class. In any case, since early culture is of primary importance for social control, the governing class in the community must retain a grip upon it. So far the school, although it may be differentiated from the family, is yet under its control. Children are trained according to their hereditary status, and the dominant family or group of families in the community prescribes the culture that the school shall give. Indeed, in early civilization the family is almost invariably the supreme institution. Not only the education of the child, but also his religion and his status in church or state, depend upon heredity; that is, upon family relationship. Where government is in the hands of hereditary classes, there the state is, in effect, only a sort of a family.

Phases in the differentiation of the school

The first phase of the differentiation of the school may be said, then, to consist in the accumulation of culture material and the appearance of a special class of men who devote themselves to the business of teaching. The second phase involves the growth of a culture that is dissociated from family interests, and the gradual development of a school not in the service of privileged classes. In this step the fortunes of the school have been allied with those of the church and the state in their struggle for distinctness and independence from the family. Finally, the school has broken loose from the church, and in alliance with the democratic state has assumed more and more complete and independent control of the work of education. We have yet to analyze a little more completely the two latter movements.

Second phase. Rise of culture not to be controlled by

The second phase of the differentiation of the school can be in its beginnings well illustrated in classical antiquity. Among the Greeks the education was at first strictly subordinated to the interests and ideals of the dominant class. The growth

of learning produced, however, two new types of culture, each of which tended to lift the teaching class out of its position of subordination. These were philosophy and oratory. Philosophy included a great range of subjects, metaphysics, ethics, politics, and the existent sciences. The pursuit of these studies led men, on the one hand, to question the wisdom and the justice of the prevailing social order, or, on the other, to become interested in the intellectual life as a pursuit of leisure. The first effect put the sophist, or wise teacher, in the position of knowing many things of which the socially ambitious could not afford to be ignorant, something for which he was willing to give pay both in honor and wealth. The second effect made the philosopher entirely independent of worldly affairs, since he found in his pursuit of wisdom an adequate career. To a civilization that idealized a life of leisure the sage had something not to be commanded, but rather to be eagerly sought. Thus in both ways the rise of philosophy tended to put the learned or wise man, the teacher, in a position of control rather than of subordination. He rose above the status of a mere instrument of the privileged class in its work of social control.

the governing classes

Philosophy as an example

In a similar way, oratory gave the sophist a measure of independence. His art was an accomplishment through which the possessor, even if he were a mere common man, was able to win political and legal success. Hence, the teacher of oratory could command patronage. In his possession was an instrument of social control that the aristocrat could not dominate, but must seek, or be worsted by one who, although inferior in rank, was superior in social skill. The sophist, whether teacher of philosophy or of oratory, was disliked by the old aristocracy, but he was not easily to be put down, and, since in his hands there was a culture which was not the servant of hereditary privilege, he lifted the school into a measure of independence of the family.

Oratory as an example

Continued independence of learning in the imperial age of Rome

After Greece lost its independence, its schools of oratory and philosophy, being cosmopolitan, still retained their appeal. Athens was transformed from a capital into an university. "Captive Greece took captive her rude conqueror." With the growth of imperialism and militarism the political uses of this higher culture became less important, but philosophy and letters retained their attractiveness as pursuits worth while for their own sake. Through them the individual, whether he were an Epictetus, inspiring a life of slavery with a profound moral ideal, or an Aurelius, worn out by the cares of state, but ever refreshed and strengthened by philosophic meditation, or a Boethius, ending a career of greatness in a dungeon, found refuge from the arbitrary fortunes of worldly affairs. Thus the schoolmaster who taught this higher culture became an independent factor among the conflicting interests of men, and the school that he represented appealed to the individual without reference to his relations to any other social institution.

Further growth of this independence with Christianity

The establishment of Christianity meant the exaltation and the popularizing of this higher life apart from worldly interests. The new cosmopolitan religion absorbed the function of preserving and teaching the learned culture. Rejecting much, it at the same time saved the essence of Platonic philosophy in its theology and the essence of the Stoic theory of conduct in its morals. Above all, it emphasized far more than even those highest products of ancient intellectual and moral culture the inner life, now conceived as the life of the soul, rather than that of the intellect. In this life, the life alone with God, even the humblest believer was held to partake. Spiritual welfare meant not wealth nor rank nor anything pertaining to the world, but rather that inner unity of the soul with the Father in which alone was found something of eternal value. On such a view, learned education became intensely individualistic

and remote from social concerns. Although indirectly religion was here, as always, a tremendous factor in social control, its professed ideal was unworldly rather than that of fostering the interests of any community or even the secular interests of the universal man.

Its alliance with the church rendered learned culture quite independent of family. Christianity aimed to set the son against the father, if the father were not a Christian. It regarded the individual as a child of God rather than of man, an heir to immortality rather than to a mere visible body. In the eyes of the church human parentage counted as nothing for salvation, and hence the education that was concerned in spiritual matters must be free to all who wished it. Thus the church became the advocate of universal education, so far as religious matters were concerned.

Instruction of the church mainly religious. Control of such instruction by special interests

On the other hand, this independence of education from the family concerned only its religious aspect. The school separates itself from its parent and early master by restricting the subject matter of its instruction, and by becoming adopted by the church. This dependence of education upon religious institutions rendered it a servant of the social and worldly interests of churches, whenever such ambitions took possession of the professed guardians of the soul. Thus, both from the point of view of the limitation of its subject matter and that of its control by an institution with other than educational interests, the alliance of church and school was ultimately unsatisfactory to the latter.

Third phase in the differentiation of the school.

The complete differentiation of the school has come about through the gradual growth of secular learning, and the accompanying assumption of national control over education, in order that this culture might be adequately fostered and justly distributed to the young. We may note the following phases in the development of secular learning: —

The growth of secular culture

(1) Scholasticism and the Renaissance led to the development of a mass of philosophy and science that was essentially secular in character. This culture caused the differentiation in the universities of Europe of the department of philosophy from that of theology. It also found its way into the secondary schools of the Renaissance.

Philosophy and science

Law and medicine

(2) The eleventh and twelfth centuries witnessed the revival of law and medicine, so that they assumed the dignity that they had gained among the Romans. This was due to the growth of new political and social conditions that favored their practice, to the gradual accumulation of a body of learning in each field, and especially to the recovery of the treatises on law and medicine by the ancients. Thus two secular departments of learning appeared in the medieval university as soon as it was founded, or, at least, shortly after. In consequence, although under the church, it was largely devoted to secular learning.

The humanities

(3) The Renaissance created or brought into prominence a mass of literature, history, philosophy, etc., that appealed strongly to the aristocracy, partly because of a change in political and social conditions, such as the development of court life and of diplomacy and the accumulation of wealth, and partly because of the slow but continuous development of taste. The revival of the ancient literature served as food for this new appetite, and afforded a nucleus for humanistic education, which became practically the sole form of culture in the secondary schools.

Literacy for the masses

(4) Protestantism emphasized the importance of literacy for all, thus urging the need for the creation of common schools. This literacy was, it is true, conceived to be a necessary phase of religious culture, inasmuch as it furnished the foundation for that first-hand knowledge of the Scriptures deemed requisite if each one were to exercise his right and duty of private judgment on matters of religion. However, the ability to read

and write is in itself a secular rather than a religious accomplishment, and any attempt to render it universal involves elaborate provisions on the part of the community for secular training. Thus religion led the way in promoting the giving of culture that ultimately found its main value in worldly affairs.

Scientific instruction in the vocation

(5) The application of science to the vocations transformed many that were only trades into true professions, and some occupations that were entirely unskilled into trades involving considerable scientific knowledge. The mass of workers in the occupations vitalized by science came to use their brains quite as much as their hands, and, in order that they might do this effectively, a preliminary school training became increasingly necessary. Moreover, the breaking down of the apprentice system tended to compel the school to assume vocational training hitherto intrusted to that agency, so that the school is now called upon to give, not only the additional preparation that present as compared with past methods require for a vocation, but also much of that preparation that was formerly gained by the child while carrying on the activities of the vocation itself.

Training in civic duties

(6) The rise of popular forms of government has created a need for training in the duties of citizenship. On the ground that it was necessary in order to give this training, Horace Mann first urged the importance of more liberal state support of schools in the United States. Republican government, he contended, demanded a special culture for the enfranchised masses.

Universal culture for the masses

(7) In addition to universal education in literacy, in science as a basis for the vocation, and in civics, modern democratic life has brought about democratization of culture in art, literature, history, and science apart from that which is utilized in the vocation. What the Renaissance aimed to give to the aristocracy, modern education aims to transmit in a measure to all.

The nationalization of education. Reasons for it

The growth of all this secular culture and its incorporation into the curriculum brought with it the nationalization of instruction. Three reasons may be offered for this. In the first place, secular instruction, in order to secure its privileges and its relative importance, felt the need of placing itself under the protection and ultimately the control of the state. Only in this way could philosophy and science, the humanities and vocational culture shake themselves free from the ecclesiastical or the denominational control that inevitably tended to emphasize culture in religion, and especially in orthodoxy, at their expense. Secondly, the extraordinary increase in the work to be done by the school gradually forced the state, as the most powerful and the most resourceful institution of society, to undertake this educational task, with which it alone was able to cope. Lastly, the growth of the democratic idea that secular education, like the religious education of Christianity, should be distributed justly to all made it necessary for the state to do what private or religious agencies must inevitably fail properly to attain, since, even when they are animated by the motive of charity, they are, after all, kindest to their own.

Steps in this process

This process of nationalizing education presents the following interesting historical stages: —

The universities become identified with the nations

(1) *The University Charter.*[1] — The medieval universities were chartered both by the Pope and by the temporal sovereign in the territory of their location. The former charter gave them the right to teach and to grant degrees that were licenses to teach. The latter gave them certain civil and political privileges, corresponding in general to the benefit of clergy. Now, although the educational function is here exercised in the name of the church, and by virtue of authority derived therefrom, nevertheless, the chartering of a special educational institution meant the separation of the educational function

[1] Compare Rashdall, *Universities of Europe in the Middle Ages.*

from the ecclesiastical one, so far as the university was concerned. This differentiation led to further educational independence, an independence which the political charter of the university tended to emphasize and support. The long struggle at the University of Paris between the Faculties and the Chancellor, who represented the church, — a struggle the outcome of which was a practical victory on the part of the University, — is typical of a conflict that went on all over Europe. It tended to identify the university, as a place where philosophy was taught as well as theology, where the practitioners of law and medicine were trained as well as the priest, with the nation in the territory of which it was situated, and to reduce the amount of control that the central authorities of the church exercised.

Secondary schools come under state control

(2) *State and Private Support of Renaissance Secondary Schools.* — The humanistic culture created its own schools. Some of these, such as the colleges of the Jesuits, were closely under religious control. All, however, were at least partially differentiated from the ecclesiastical organization of the church. Some were fostered by private endowments, by the nobility, by princes, or by municipalities. All of these tended to come under national control.

National control of the church affects the school

(3) *The Rise of National Churches.* — The Protestant movement brought the church largely under national control. The head of the state became the head of the church within his dominions. As such, he controlled education as well as other spiritual affairs.[1] When the function of educational control, support, and supervision became more extensive, it became practically distinct from that of religion.

Universal state popular education in the nineteenth century

(4) *The Establishment of National Systems to promote Universal Civic and Industrial Efficiency.* — Four distinct reasons may

[1] In the German states to-day education and spiritual affairs belong to the same department.

Its causes

be noted for this interest on the part of the state in universal education. First, in the development of nationalities like that of Germany to-day, education was recognized as a most important agency for rousing patriotism, developing the national sense, and promoting that citizenship which would best make for national solidarity, welfare, and glory. The state could from interested motives concern itself in fostering an education that furthered national political purposes. Second, in democracies we have another case of the growth of national education as a means of social control. The early argument for liberal state support of education is based on the supposed need of general intelligence and culture among the citizens, if the nation were to be saved from the arts of the corruptionist and the demagogue.[1] Third, in the modern commercial and industrial rivalry of states many nations have come to feel that success depends largely on efficient education in the scientific foundations of trade, manufacturing, agriculture, mining, building, transportation, and engineering. Hence the extraordinary development of schools for such instruction by European states. Finally, the state is rapidly coming to feel that it should cultivate this increased efficiency on the part of its citizens, not only because such a gain makes for national greatness, but also because it brings about an increase in the individual welfare which it is the business of the state to foster. Thus the nation comes to do in the service of the individual that which it first undertook in order to serve itself.

Summary

In reviewing the process by which the school is differentiated from the other social institutions, we notice these aspects: the effect of accumulating culture in forcing the educational function to become specialized; the subordination of the school to family, church, or state in their endeavor to use its culture

[1] Compare Horace Mann, *Necessity of Education in a Republican Government*, and the views of Washington and Jefferson.

as a source of social control; and the gaining of freedom by the school through the rise of "academic" culture and of culture of value primarily to the efficiency of the individual rather than to the supremacy of a privileged class. The differentiating effect of additions to the subject matter of culture is illustrated continuously through educational history. In the beginning, it brought about the learned class and the school. Later, the rise of academic culture enabled the learned class to break loose from the control of privileged classes. Ultimately, the school allied itself with the church and became excessively unworldly, so unworldly that in its zeal for the eternal interests of the individual it often forgot his temporal ones, if, indeed, they were not consciously overlooked and abused. Democratic as the church was in spiritual affairs, it could yet defend the doctrine of the "divine rights of kings" and enter into a fierce struggle for temporal power. The rise of the modern type of education for efficiency meant educational ideals and materials which concern the welfare of the individual rather than that of any special class or institution. Hence, it led to the complete differentiation of the school. To gain this independence it allied itself with the state. This institution, although at first it made use of education to promote national ends, such as self-preservation, glory, or wealth, has ultimately come to permit the school to devote itself solely to the task of affording to the individual that culture which seems best calculated to secure his personal welfare.

Section 50. *The rise of academic freedom*

Three phases of academic freedom

The question of the differentiation of the school is so closely bound up with that of its independence that the preceding section has constantly trenched on the ground of this one. Much, however, remains to be said on the latter topic, a topic

commonly discussed as the question of academic freedom. This conception has, as is to be expected, undergone an evolution, which has revealed from time to time such new phases of scholastic independence as the special emergencies of certain historical periods brought into dispute. Three aspects of academic freedom may be noted. It has meant successively freedom of investigation, freedom of teaching, and freedom in determining the nature and scope of education, a conception which only in recent times is receiving clear recognition and formulation.

(1) Freedom of investigation

It may be thought that freedom of investigation does not concern the school. For, although investigation continually recreates the curriculum, it is not a necessary function of the teacher. Nevertheless, historically, the learning that the school imparts has been very considerably the product of those who are in this profession. Beginning as mere guardians of social heredity, they have gone on to study more deeply the sources, the meaning, and the truth or justice of that which they have taught. From teachers they have become investigators, and no field of human action or thought has evaded their researches.

The school as a place for investigation

The school as resisting investigation, as the judge of the permanence of new ideas

On the other hand, the school has often resisted the progress of investigation. This is especially true when it comes under the control of certain institutions or classes that use it to further or to preserve established practices or positions. However, since the success of new ideas depends largely upon their being accepted by the school and thus grafted on social heredity, it may be said that the products of investigation must ultimately meet the approval of this institution before they really become current. In the progress of time, the school has come consciously to assume both the rôle of investigator and that of the judge of investigators. The result has usually been a conflict between the leaders among the learned class and certain

dominant social orders that from characteristic conservatism or from fear that their privileges or power will be curtailed are apt to resist all changes. We find such a struggle among the Greeks at the time of the Sophists, among the Romans of the age of Cicero in resisting the inroads of Greek culture. Especially important, however, is the conflict roused by the gradual advances of the school in philosophy and later in science since the Dark Ages. From its beginning the medieval university was associated with the application of reason to matters of faith; that is, with philosophy as the "handmaid of theology." Ultimately science, which at first was cultivated rather without than within the school, found its home within this highest educational institution. The result of these advances was that again and again the university was compelled to fight in behalf of its right to pursue its own intellectual researches irrespective of their bearing on the established order of church or state or the privileges of aristocracy or wealth. The position of dependence in which it has been placed has forced it to compromise these contests. The usual form of the compromise is to permit the school to investigate freely, but to forbid the application of its results to the practice or beliefs of the institutions or classes that are able to control it. Thus, what is true for philosophy is held to be false for theology. Thus, science was tolerated so long as it kept to purely "academic" issues, but the biologist must not push the idea of evolution to the detriment of orthodoxy, and the economist or the sociologist must not teach doctrines at variance with the interests of actual or prospective donors of the institution that pays his salary.

Restriction of investigation to academic issues

It is true that other conditions beside the restrictions of controlling agencies have conspired to render the school academic. The fact that science frequently requires to be fairly well advanced before any large practical applications are

Application of the results of investigation by those outside the school

found for it is one among many positive causes — to be discussed later — which have caused the school to limit its interest in investigation at first to purely academic matters. The result of this separation of the academic from the practical has been that the applications of the investigations of the school have seemed to come largely from those not engaged in education. Such persons were free from the negative restrictions of the school, and their positive interests were usually in application rather than in theory. However, philosophy and science are both bound to tend toward practice, and with the rise of academic freedom the school has come to show quite as much interest in application as it ever has in knowledge for its own sake.

The rise of democracy and the removal of the restriction of investigation to the academic

Thus the school advanced from subordination to dominant groups to a freedom the practical efficacy of which was paralyzed by limiting it to the academic. The rise of the democratic state has caused this restriction to be very largely removed. The development of the conception that government should aim at the largest efficiency for all and that this result can come only from a profound knowledge of the truth has led to the view that the agencies for investigation must be permitted the widest freedom, and that they must concern themselves with practice as well as with theory. Indeed, there has recently appeared a strong tendency to create special institutions of research in order that the investigator shall not be hampered even by the necessity of teaching. Since the school, on the one hand, has come to be no longer feared as a source of social or religious discontent and, on the other, has ceased to be disparaged as concerned with that which has little or no practical importance, it has succeeded in obtaining, not only scholastic independence, but also that more liberal support without which a real independence is impossible.

If the freedom of investigation is typified in the liberty of

conscience, the freedom of teaching may be regarded as a phase of freedom of speech. The two sorts of academic freedom usually involve each other. What one thinks he usually finds it nearly impossible not to express, and expression is always in effect a form of teaching. Hence, freedom of investigation would be very difficult as well as comparatively useless unless it carried with it the right to make known what it discovered. However, it is possible for investigation to be permitted and, indeed, encouraged, even though the public expression of its results is held in check. History reveals cases where what a teaching class knows and believes is quite distinct from what it is permitted freely to teach. In such instances we have what are known as esoteric views, taught, it is true, but to a limited number of the elect. A body of learning may become esoteric for various reasons. It may be held to be incomprehensible to the average individual, and, for that reason, be taught only to the gifted few. Or the group solidarity and the prestige that is gained by any select body from the common knowledge of certain matters kept secret from the profane may lead its members to cherish these mysteries. This motive can be seen in the secret societies of primitive men, in the religious mysteries of the ancients, and in the fraternal orders of to-day. But the third motive that causes learning to become esoteric is probably more influential than either of the others. When men of active intelligence and reflective life come, as a result of their researches and meditations, to entertain beliefs that might subvert the authority or the privileges of a dominant class, they must as a matter of self-preservation keep their discoveries to themselves. Especially is this so when they themselves constitute a group the prestige of which rests, or is thought to rest, on the continued faith of the multitude in doctrines which they have ceased to hold. Even in our own age of freedom men give in their external

(2) Freedom of teaching. Its implication in freedom of investigation, yet the latter may exist without it

Causes of esoteric teaching

assent to practices and views the foundations of which they do not regard as sound, justifying their attitude by prudence, coupled, perhaps, with cynical contempt of those whose intellectual inferiority permits them to be deceived.

Value of keeping knowledge as esoteric found in (*a*) checking ill-considered revolutions;

Thus men permit themselves, or are permitted by the powers that be, to investigate, provided they do not spread abroad what they discover in case it is subversive of powerful institutions or privileges. This divorce of the esoteric from that which is publicly taught is not without a value. Indeed, we may say the same of the restriction of the school to academic investigation, for this condition doubtless served to concentrate thought upon philosophy and science for their own sake, and thus to make possible the accumulation of a mass of knowledge for the reconstruction of human practice, such as could not have been obtained had the investigator kept himself closely to researches that yield results which can immediately be applied. The value of keeping knowledge as esoteric may be found in that in this form it is not too hastily or unwisely applied to the subversion of the social order. This use is allied to the function of superstition, which we have earlier indicated.[1] As superstition may prevent reason from resulting in anarchistic individualism, so the keeping of knowledge to a few may prevent it from carrying under the very social agencies that have brought it forth, until society can reconstruct itself in accordance with the new light. Intellectual revolutions affect the social order at first destructively. The process of reconstruction is not to be accomplished by mere schemes sprung fully matured from the minds of men of genius. Rather, they must be a product of much reflection and long experiment. Social stability during this period of experimentation may best be safeguarded, as Des Cartes suggested,[2] by clinging to the old, even though it be somewhat

[1] Compare § 14.

[2] *Discours de la Méthode*, Part II.

discredited, until we are fairly certain of the effects of the new. Herein lies the value of a conservatism in expressing new ideas that seems to smack of hypocrisy.

(*b*) preventing the paralysis of action

Again, not only does the intellect discover the shortcomings of traditional theory and practice long before it is ready to replace these by anything that will work, but the tendency of investigation is also dangerous from the mere fact that it raises doubt and paralyzes will. Human conduct is both in the individuals and states often determined by beliefs that cannot, at the time at least, be established by scientific methods. Hence these beliefs can be challenged by contradictory opinions, and so long as the intellect preserves its pause of reflection no solution is possible. The demands of life require that this Gordian Knot of indecision be cut by will. There are ages when intellectual analysis and dubiety must be replaced by belief that will not doubt, and by a volition that cares more for the accomplishment of results than for the soundness of its premises. Such an attitude requires that the unsettling results of investigation be kept in the background. In the long run, the practice that is thus permitted free play may result in that very experience by which it is possible to resolve doubts and arrive at conclusive judgments. Thus the abandonment of the attempt to establish practice on convincing reason involves a resort to the arbitrament of the event, through which alone the experience necessary to satisfactory intellectual decision can be obtained.

Consequent acquisition of decisive experience

The growth of stability of judgment as removing the need of the esoteric

But while the separation of what is esoteric from that which is exoteric in teaching may be an inevitable and a desirable phase in the evolution of academic freedom, it tends to give way before the forces that make for enlightenment. Society ultimately arrives at a degree of self-consciousness concerning its mechanism and of self-control in regard to its actions which permits the truth to be known about as rapidly as it is

discovered. The age of revolution is replaced by one of more steady progress. Institutions are no longer subject to sudden reconstruction, to be followed by long periods of comparative stagnation, but they become flexible. To be sure, it is not likely that progress will ever be absolutely continuous in rate. Nevertheless, spasmodic growth may be expected to be less and less in evidence. Under these conditions the investigations and teachings of the school may be expected to produce constant changes, but they will be less likely to result in violent ones.

Freedom of teaching as conducive to judgment

The full freedom on the part of the school to find out the truth, if it can, and to teach it when it is known, reacts favorably upon the sobriety of judgment of this institution. The limitation of academic freedom historically may often be justified from the tendency on the part of the investigators of the school to arrive at conclusions without adequate data. Against the inferences of a rationality too often divorced from fact society had frequently need to defend itself. The development of greater perfection of scientific method and of the critical power to distinguish between the proved and the hypothetical are partly an occasion for permitting greater academic freedom, and partly a result of the increased sense of responsibility which experience in such freedom has produced.

(3) Freedom to control the work of the school

The third phase of academic freedom is freedom in determining the nature and scope of education. It means that the school is at liberty to prescribe to its pupils what they shall study and the method of their work. In one sense such power is involved in the extension of freedom to investigate and to teach. Investigation creates and reforms the curriculum, and teaching tends to follow as it directs. On the other hand, academic freedom in these respects has often, as we have seen, been purchased at the cost of a limitation of the nature and scope of the work of the school. Freedom to investigate and

to teach what one finds to be true was permitted, but all subjects which the dominant classes in the community wished to preserve inviolate were excluded from the school curriculum.

Laissez faire in education as involving a dependent school

As a matter of fact, the attainment of liberty of thought and of conscience, of speech and of the press, which the eighteenth century conceived as fundamental among the rights of men, was coupled with a notion of *laissez faire* in government, which left the school in dependence upon private agencies, and so a mere expression of family ambitions or denominational views. Thus we have the "freedom of teaching" of the France of the Revolution and of the United States during much of its history. The state simply lets education alone. Such an arrangement theorists like Herbert Spencer conceive to be the one most conducive to the welfare of the individual and the progress of society. Consequently, they oppose any attempt on the part of the state to assume control of the school.

Spencer on the evils of state control of schools

"For what is meant by saying that a government ought to educate the people? Why should they be educated? What is the education for? Clearly to fit them for social life; to make good citizens. And who is to say what are good citizens? The Government. There is no other judge. Hence the proposition is convertible into this — a Government ought to mold children into good citizens, using its own discretion in settling what a good citizen is and how the child may be molded into one. It must first form for itself a conception of a pattern citizen; and having done this, must elaborate a system of discipline which seems best calculated to produce citizens after that pattern. This system it is bound to enforce to the uttermost. For if it does otherwise, it allows men to become different from what in its judgment they should become, and therefore fails in that duty it is charged to fulfill. Being thus fortified in carrying out such plans as it thinks best, every Government ought to do what the despotic Governments of the Continent and of China do. The regulation under which, in France, private schools cannot be established with-

out a license from the minister and can be shut up by a simple ministerial order is a step in the right direction, but does not go far enough, seeing that the state cannot permit its mission to be undertaken by others, without endangering the due performance of it. The forbidding of all private schools whatever, as until recently in Prussia, is nearer the mark." [1]

Laissez faire policy defended as the basis of progressive and just education

Among the most important consequences of state education, according to Mr. Spencer, is that "the teaching organism itself, and the Government which directs it, will inevitably lean to things as they are, and to give them control over the national mind is to give them the means of repressing aspirations after things as they should be."

According to this view, — the *laissez faire* theory of education, — the school will be freest to investigate, to teach, and so to progress in case it is left to private agencies which are protected in their freedom of teaching. A national system is supposed to mean paternalism, the suppression of variation, and so of progress, in a word, absolutism with all its attendant evils. What we need is freedom on the part of the individual to study what he chooses. Let the laws of demand and supply operate as freely as human contrivances can permit. The school, made dependent on the demands of its patrons, will supply whatever their ambitions and intelligence require. Thus, it is assumed, each will get the kind and the amount of education that he deserves. We will have justice in giving to each what he earns and values, freedom in forcing upon none what they do not want, and progress in providing the greatest freedom for the development of individual differences and for their struggle for existence.

Likelihood of the opposite effects

The believer in *laissez faire* holds that freedom of teaching involves no interference on the part of the state in the work of education. But such an arrangement leaves it a mere servile

[1] Spencer, *Social Statics:* Essay on National Education.

flunky upon the tastes and prejudices of its patrons. It must give that which will insure it pupils. Under such conditions there is no freedom to teach, for if the school does not teach what the parents want, — that is, if it does not give up its freedom, — it cannot teach at all, since it will have no patronage. Hence, genuine academic freedom requires that the state should protect the school in determining the content and method of education. Without this privilege and responsibility academic freedom is left ineffectual.

State control the prerequisite of complete academic freedom

The two issues, that of control of education by the school and that of control and support of the school by the state, have gone hand in hand. If it be admitted that there should be complete academic freedom, one must at the same time grant that the school can be placed in this position only by the generous support and protection of a democratic state. Historically it is true that national education has been both conservative and calculated to favor the welfare of the nation or that of a dominant class rather than that of the individual. However, this result sprang from the fact that the state has been under the control of classes or of conservatives. When once this institution has become imbued with the spirit of progress, there is no reason why it should not favor intellectual investigation and reform through education. Moreover, the democratic state is pledged to secure, so far as possible, equality of opportunity. Hence, it cannot favor education in the interests of classes. The event has proved that national education tends toward both the most exact justice to the child and the largest efficiency in the school.

Academic freedom a condition of expert control

But while it may be agreed that national education means the greatest measure of academic freedom for the school, many may question the wisdom of permitting such power to come into the hands of the teaching class. It remains to show that the greatest efficiency in education springs from giv-

ing to the school the power to determine what and how it shall teach. There are two fundamental reasons for this complete academic freedom. These are the growth of education into a profession involving special knowledge and skill, and the fact that education deals with individuals who are incapable, without direction, of knowing or getting what they should have. The growth of the systematic study of education and of the professional spirit among schoolmasters has led them to demand and to receive more and more that influence in the direction of their special work which is due to the expert. This movement has been furthered by the rise of universal education and of the ideal of education for efficiency. Universal education has intensified the difficulties of school method and created a vast number of problems of supervision and administration. The attempt to secure efficiency as the result of teaching has involved problems of adapting the course of study to life that were not realized when the "piety, knowledge, and art of expression" that the school has been wont to cultivate were felt to be worth while for their own sake. Thus both the rise of expert knowledge and the difficulty of modern utilitarian education have conspired to raise education into a profession and to secure for it practical control over its work.

Expert control the foundation of progress in education

The development of education into a special science in the hands of experts must of necessity react upon its progressiveness. In the first place, it is relieved from dependence upon the prejudices of its patrons, which are of necessity largely uncritical. These lay opinions are apt to be conservative. Men look back fondly upon the education that they received, or thought they received, and sorrowfully contrast it with the "fads" and the superficiality of to-day. On the other hand, when the lay mind does feel the need of progress, it is apt to ride its hobbies without that careful criticism which can

come adequately only from patient study and investigation. The special science of education aims to separate what is known from what is problematical, to accumulate data, to conduct educational experimentation, and so to organize the profession that what is once established need not be forgotten for lack of any systematic method of making it known. Thus academic freedom means professional unity, and that systematic organization of educational research which replaces mere chance progress by conscious effort under the control of scientific method.

Academic freedom necessary to a just distribution of education

The school should control its work, not only that it may make this scientific and progressive, but also because in a peculiar sense it deals with those who are in need of direction. To leave education in the hands of private agencies means to make the education of children dependent upon the resources and the standards of parents. Now, while parental ambition is one of the noblest of emotions and deserves to be encouraged, to leave the child dependent upon it and its resources means inequality and injustice to many. A democratic society must believe that the child of poverty and degradation is, as a child, quite as deserving of educational opportunity as is the scion of wealth and nobility of life. To be sure, no scheme except one which, like that of Plato, abolishes the family can destroy its influence on education. Yet the more glaring inequalities that spring from the relegation of this function entirely to the family can be remedied by establishing a school equipped with resources and power such as make it genuinely free in its supervision of the nature and scope of the training of the young.

The independent national school as a source of individual freedom

Thus the modern state, which holds itself responsible to do its best for the welfare of its citizens, has come to devote itself especially to the task of equalizing educational opportunities through a national school. The policy of *laissez faire* has

been replaced by that of providing, in conformity with the ideal of Horace Mann, a public school so good that no parent would prefer a private one on account of the greater merit of its instruction, and of so far interfering with the liberty of the individual as to compel the attendance of the children, to limit their right to labor, and to provide them, where necessary, with the food, the clothing, and the other resources that are required to make the work of the school effective. This policy, so far from being an agency of tyranny, is the source of the largest freedom to the individual. A system of education resting on charity and private patronage is bound to reflect the point of view of those families of wealth and station who constitute its main support. The social control of such an institution is inevitably thrown upon the side of the interests that it especially represents.

Endowed private schools may be academically free

The national school is not of necessity supported wholly by public funds nor controlled entirely by state officers. Large private endowments, when they are not accompanied by express or implied conditions that limit academic freedom, do not hamper but rather aid the national school. Moreover, the control of such endowments by self-perpetuating boards of trustees is not inconsistent with a responsiveness to public opinion. In these educational agencies, therefore, we may and do have merely parts of a national system. Indeed, the President[1] of one great endowed American University has maintained that in effect such an institution is as genuine a part of the state system as is the so-called State University. While the truth of this view may be granted, it is also clear that without the support and protection of the democratic state the school could not have been able adequately and freely to care for the task of education from the elementary school to the university. Academic freedom in the highest sense has meant

[1] President Butler.

that the state should assume the responsibility for the existence of a school that could control education effectively, and without any other motive than the desire to foster impartially the welfare of children.

Resumption by the school of the teaching of interdicted subjects

The control by the school over the nature and scope of its work has enabled it gradually to reassume the teaching of many subjects that had been shut out of its curriculum as a condition of its independence. Thus religion and politics are gradually making their way into the researches and the instruction of universities. Doubtless, such subjects will eventually reach the elementary school. When education ceases to confuse opinion with scientific certainty and comes to teach facts apart from hypotheses, its assistance on matters of vital practical import will not only be permitted but desired and, indeed, expected.

Implications of complete academic freedom:

Academic freedom in its completest sense may be said to imply that the school should possess the following powers: (1) control of the curriculum and of methods of teaching; (2) control of the appointment of teachers; (3) compulsory education; (4) control of school finances; (5) adequate school appropriations. It will be seen that these powers make the school dominant in all educational matters, as, indeed, it should be. However, there are perils in such authority, and it is not difficult to see what they are. Before discussing them and the limitations of power that are necessary to escape them, it may be well to consider a little more specifically the meaning and justification of each implication.

(1) control over the curriculum and methods of teaching;

The control over the curriculum and the methods of teaching is the only condition under which the work of education can become an expert profession, alive to its responsibilities and full of the spirit of progress. As well ask a physician to conduct and be responsible for a case in which his advice is freely disregarded, as to ask the school to teach our children and

then to prescribe the details of what it should do. Indeed, there is more need of independence for the school than for the physician, since education concerns the interests of an immature child and seeks freedom from ignorant parental meddling with its endeavors to serve these, whereas the physician is dealing usually with a responsible adult, and wishes only to enforce a regimen the value of which can ordinarily be quickly realized by the patient himself.

(2) control over who shall be permitted to teach;

The determination of who shall be teachers must in large measure rest with the teaching profession. If this authority is not so placed, there is no assurance that the best ideals and practices of the profession will be illustrated in those who are called upon to teach. There is, indeed, no certainty that the judgment of teachers about teachers is always better than that of those outside the profession. But, at any rate, the selection of teachers by superintendents who are responsible for the results that they attain tends to free this matter from all sorts of influences other than those which are professional, — influences which tend to degrade the intellectual as well as the moral standard of the profession.

(3) compulsory education;

Again, compulsory education has come to be recognized as indispensable in order that irresponsible or destitute parents, or the ignorance of childhood, may not, so far as this can be prevented, interfere with the beneficence of the school in providing the essentials of a standard education.

(4) control of the disposition of school money;

Finally, in reference to school finances, it is evident that in so far as these are applied to matters purely educational in character, the expert in education should be regarded as the best judge of their disposal. The power of the purse is in many ways the determining influence, not only in the matter of the extent of education, but also in that of its character. In order that its extent may not be improperly limited, there should be adequate school appropriations, and the funds

(5) adequate financial support

thus available should be disposed of under the guidance of competent educational advice.

Summary

To recapitulate, academic freedom has assumed three forms, each of which involves special issues. As the teaching class becomes more and more a group of experts in learning, they naturally drift into investigation. Their researches touch upon vital questions of social control and incite the hostility of those whose status in society is threatened. In such a pass, freedom of investigation may be retained at the price of restriction to such questions as are "safe" or "academic." But investigation tends to trench on the forbidden. In that event, it often saves a struggle by failing to publish its results. The school has frequently protected itself from loss of prestige or the enmity of privileged classes by keeping as esoteric what it has discovered. Thus it gains a wider freedom of investigation at the expense of a limitation of freedom of teaching. The rise of modern democracy meant first the *laissez faire* theory of government. According to this conception, the school gained theoretical freedom of teaching, but since it was left dependent on private patronage, this freedom was unable to become effectual in any large way. The further evolution of democracy has led to the view that government should interest itself positively in providing for the welfare of its citizens. This notion has involved especially the endeavor to provide equality of educational opportunity for children. In carrying out this view the state seems in the act of creating a school with complete academic freedom, — that is, recognized authority over the curriculum and methods of teaching, power to determine who shall teach, power to compel attendance and to dispose of school finances, and adequate support for its great work.

Section 51. *Interdependence of the school and society*

Academic freedom as a source of irresponsibility in education

It is evident that the powers which academic freedom has been shown to imply need limitation in order not to involve a preposterous independence on the part of the school. The school should be independent of the rest of society just in so far as that independence is necessary in order to insure its most effective service to the individual. On the other hand, a degree of dependence should exist in order that the school may be kept to this service. In a general way, society has always been alert to this situation. Academic freedom has many advances to make before it is likely to place the school in an irresponsible position, and, doubtless, the checks that are wont to surround each new addition to its power and liberty will adequately protect the public against educational tyranny.

Consequent isolation, loss of vitality, and selfishness in the school

The serious dangers that the rise of academic freedom involves fall under three headings. The school may become isolated from practical life and unresponsive to its demands. It may become too mechanical in its organization and work, thus ceasing to display vital growth. Finally, it may come to be run in the interest of the teachers, rather than in that of the children.

These phases of degeneracy because of power are, in a sense, distinct from each other. The school may isolate itself without becoming mechanical or even selfish. Mechanism may impair the progressiveness of institutions that aim for the sake of service to keep in close touch with the utilities of life. Lastly, self-interest may be a dominant motive in schools that study well the times in order to conform to popular notions or powerful interests, rather than to discover the best method of serving the welfare of the young. On the other hand, these three evils all tend to involve each other, and a

school developing independence on account of resources and a prestige that makes it a great power in social control may easily lose its touch with the interests it should serve, and become incrusted by conservatism and selfishness.

Proper division of authority between educators and boards of control

In order to insure the prevention of this result, it is necessary, of course, to limit the independence of the school. The school and the community must be made interdependent, and the principle of this relation is to be found in a division of power. Practice in this matter seems to be drifting toward an arrangement which leaves to those in the profession of teaching the task of planning all specific measures that relate to the organization, the program, and the teaching of the school, and assigns to authorities outside the profession a power of vetoing such plans or of choosing among submitted alternatives, together with some responsibility for criticism or suggestion in regard to existing or proposed conditions. Such an arrangement should, undoubtedly, apply literally to the control of the curriculum and methods of teaching. Here it is quite certain that, while the community as a whole, and especially such trustees as are appointed to exercise oversight over the work of the school, should be empowered to veto any proposed plan, and should feel it their duty to watch, criticise, and advise the school, still the definite initiation and the detailed formulation of plans should be intrusted to those whose business it is to carry these out if they be adopted.

Application of this principle (1) to the internal work of the school;

When we come to the appointment of teachers, the application of our principle may be seen in the generally prevailing requirement that they should be certificated or licensed on the basis of qualifications that are tested by those in the profession. Such an arrangement still leaves great liberty of choice to the controlling boards composed of laymen. However, the tendency is rapidly growing to intrust to superintendents, principals, or presidents the power of nominating

(2) to the appointment of teachers

teachers and of assigning them to their specific work, thus leaving to the lay board, so far as subordinate appointments are concerned, the sole duty of approval or rejection of the nominations made. In addition, however, they usually possess the power of selecting the leading administrative officers. This power is in turn limited in various ways. First, it is practically necessary to have the approval of excellent professional judgment in selecting these officers. To-day a system of educational credentials has grown up, which practically constrains, not only lay boards, but also administrative school officials, to conform in the making of appointments to the verdict of at least a respectable body of opinion among the teachers themselves. Second, the teachers in some schools exercise certain direct powers in reference to the appointment of their chief executives. In the German University, for example, the rector, or in case the head of the principality possesses that official title, the acting rector or prorector, is really selected by the members of the faculty, the state authorities possessing the right only of refusing to confirm this appointment. It must be noted that the professors are not selected by the rector, but by the government, usually, however, on the advice of the faculty or of its representatives.

Reversal of the rule in appointing executive heads

It is possible that a governing head having the general responsibility and authority of the American president, principal, or superintendent is, on the whole, most favorable to a comprehensive, impartial, and progressive policy in the school. On the other hand, it seems equally certain that such an officer should be, in some measure, subject to the judgment of the teachers whom he commands. Two methods of bringing about this result are available. Either these officers may be in the beginning nominated by the teachers, or they may be subject to the approval of those whom they are to direct. In the former case, the teachers may nominate one or a number of

Possible methods of giving the teachers a share in such appointments

candidates, and the governing board exercise in the one case a confirming, in the other, a selecting, power. The first arrangement would preserve the principle hitherto laid down in regard to the division of functions between professionals and laymen. It would, doubtless, seem to most like putting the school too much in the hands of the teachers. Moreover, it is possible that the plan would lead to improper intrigues among them. On the other hand, it should not be forgotten that where lay boards have entire control of this matter intrigues and unprofessional influences have all too frequently determined the choice of school officers. But whatever may be said of the ultimate desirability of having the teachers nominate their executive heads, it would seem that the time is ripe for at least a limited application of the other plan by which the appointment of administrative officers through lay boards would require the confirmation of the teachers in the school they are to conduct. It is likely also that a considerable majority of these teachers should be able to remove their executive officers.

Difficulty in applying such plans to elementary schools

It may seem absurd to think of such a plan as applying to our elementary schools. And it must be confessed that the youth and immaturity of many of the teachers in these institutions, coupled with the fact that they are to such an overwhelming extent women, a large number of whom are soon removed from the profession by marriage, makes the problem here especially difficult. It is safe to say that with the current belief in the need of discipline among the rank and file, no body of teachers will be intrusted with the power of confirming the appointment of educational executives unless their training and quality are clearly such as to make this provision an advantage to the school. Such would seem to be the case with colleges and universities and with many secondary schools.

De facto influence of teachers in the appointment of executives

Meanwhile, it is clear that, although the teachers are not officially intrusted with the power of confirming the appointments of their chiefs, or of removing them when objectionable, nevertheless, they do in practice exercise this function in exactly that degree to which they give expression to opinions which are held by the community to be of weight. No board of trustees would venture to appoint or to retain an executive officer against the judgment of a body of teachers whose verdict was regarded as mature and impartial. The only advantage that the official power of confirmation or removal would have would arise from the fact that it would tend to disabuse both the teachers and the community of the notion that such a matter is not the concern of any but the governing boards. This attitude reduces the school to a business in which the teachers are merely employees. There can be no question that this situation is bad for teachers, for community, and for school. The school is not this sort of a business. It is a coöperative enterprise the sole aim of which is the welfare of humanity through education. In such an enterprise the principles of democracy, on the one hand, and of the control of expert opinion, on the other, are paramount.

The issue in compulsory education

When we come to compulsory education, the issue is not between teachers on the one hand and boards of trustees on the other, but rather between the school and the individual, whether parent or child. The necessity of compelling the child to attend school for a certain length of time in order to avoid the evil consequences of forces over which he has no control has already been emphasized. Parental poverty or neglect or the ignorance of both parent and child produces results for which the child should not have to suffer. Hence the school should endeavor to prevent by force these consequences.

Objections to compelling attendance

The chief objections to compulsory education are that it is an unwarrantable interference with the liberty of the individual,

and that only that education which is freely sought is of any value. The first objection is, of course, answered by the consideration that compulsory education interferes only with the parent's right to abuse the child, or with the child's right to abuse himself before he has arrived at years of discretion. The second objection is more important, and upon it can be based the principle that should govern the limits of compulsory education.

Attendance secured by attraction and by force

The school has, in general, tried to bring about universal education by two methods, by making attendance compulsory and by rendering its work attractive. The latter is the one more generally resorted to in the United States, where compulsory attendance laws are usually poorly enforced. European states have not hesitated to resort to effective compulsion, and it may be said that in the present condition of society this course is desirable. The school cannot be made attractive enough to entice some children without at the same time losing much of its educational virility. Moreover, the endeavor to do all by attractiveness may lead to "soft pedagogy," to education that makes the child passive and dependent rather than active and efficient. On the other hand, no school work can be regarded as very seriously worth while unless it comes to be valued by the recipient. The justification of compulsion lies in the fact that it may and frequently does lead to appreciation. Families that resist education may, under the pressure of a sense of its inevitability, reconcile themselves to it, and come to feel its worth. The state can impress upon its people the desirability of education most quickly and effectively by compelling them to try it. There can be no question that compulsory education tends to destroy its own necessity, and that its practice on any large scale is merely a policy for a transition.

Necessity of compulsion

Thus we are led to the principle that should determine the

The limits of effective education by compulsion

limits of compulsory education. Such coercion should cease when appreciation of education may be expected to begin, if it is to begin at all. What the child is forced to get is of little value unless it leads to a desire to get more; and it is in this culture that is freely sought that all large educational benefit is to be found. Hence, the school, in relying upon the assistance of compulsion, must not lose sight of the fact that this is a merely temporary measure, and that attraction is, after all, the only ultimately effective educational motive. When the child has reached an age at which it can fairly accurately be said that both he and the school know whether they should have anything more to do with each other, compulsory education should cease.

Extension of the age limit of compulsory education

The determination of this age is, of course, a matter of practical experience, but it may be noted that as the curriculum expands to include vocational training, and especially as secondary education comes to be devoted more systematically and resourcefully to the task of helping the student to find himself,[1] the period of compulsory education may well be extended. Such is, indeed, the tendency; for example, the compulsory attendance on continuation schools in Germany, and the extending of the age of compulsion beyond fourteen in some American states. A pupil may, before he has by any means exploited the resources of the school, ignorantly decide that this institution has nothing for him. As the educational resources expand to meet all or nearly all types of ability, the school has a right to insist that at least an attempt shall be made by the pupil to discover and to utilize what is prepared for him. Coercion may frequently be valuable as an aid to adequate experimentation in various lines of work.

Desirability of making it variable

Finally, it is probable that the length of time during which attendance should be compulsory is not the same for all chil-

[1] On the function of secondary education, compare § 53.

dren. To keep a boy in school after it is certain that he can receive no benefit from it is an absurd tyranny. On the other hand, it is evident that many children want to leave school long before they have received from it the proper cultivation of their talents. It should be within the power of the educational authorities to release some from the obligation of attendance with which others are forced to comply. The age limit of coercion should, therefore, like the modern criminal sentence, become somewhat indeterminate; or, to push the parallel further, be stated as a maximum capable of being reduced at the discretion of the school authorities.

Application of the principle of division of power to control of school finances

In regard to the distribution of school finances, we find that our general principle applies fairly completely. The fixing of the scale of salaries and of the relative amounts that should be devoted to this or that educational purpose are being left more and more to the executive officers of the school, the boards of trustees exercising merely the functions of approval or rejection. So, too, the school officers are expected to indicate what they regard as adequate school appropriations, trusting to the wise economy of the taxing authorities to see that their estimates are properly cut down.

The freedom of interdependence as the basis of effective education

It is evident that academic freedom, when it is interpreted as the freedom of interdependence, is, so far from being a source of danger, the true panacea for the perils that are supposed to be its result. The supremacy of expert opinion, safeguarded by the need of obtaining for it the approval of the representatives of society, means, not the isolation of the school, but mutual respect and support between it and the community. The attention of the teachers is being continually centered upon the needs of the community, which they must strive to meet in order to win the support of their governing boards. On the other hand, the boards, limited in their powers to a consideration of the plans of educational experts, will

become more keenly aware that education is a science deserving of professional study, and yielding far greater results if submitted to trained intelligence than if held to the traditions and the common sense of those who devote to it only incidental attention. Under such conditions the school will be not only differentiated and free, but it will be suffered to absorb more and more under its control those educational functions that have been withheld from it by church or family or state. There can be little doubt that much more religious culture may profitably be given in the school than is the case at present. The time will undoubtedly come when all denominations will welcome the assistance of the secular school in fostering both religious intelligence and religious attitudes. So, too, the family, the principal source of moral culture, will be grateful for a more serious attempt on the part of the school to arouse in the child a sense of the various duties of life; and the state will find the civic intelligence and responsibility of its citizens developed and strengthened by a more careful study in the school of the mechanism and issues of politics and government.

Function of the school in religion and morals primarily that of clarifying intelligence

In this larger sphere the school must, of course, act in the spirit of science and reason, uttering dogmatically only what has been conclusively proved, and setting forth alternative views with the greatest freedom. Nor can it hope to take the place either of church or family in connection either with the religious or with the moral life. Its essential function is the clarification of intelligence, whereas the church and the family are centers for carrying out in a practical way religious and moral attitudes. But it is not to be supposed that this fact excludes the school from taking account of the significance of religious faith or of self-sacrifice. If these are permanent elements in human culture, they must be capable of support from a frank and incisive examination of facts and reasons.

Indeed, so far is it from being true that rationalism is the parent of irreligion and individual selfishness, that only through rationalism can they hope to save themselves. It is true that reason has been a dangerous enemy of faith that strives to maintain itself at the expense of reason, just as it has of social rights and duties that serve only to sustain the privileges of a class. But if, in its iconoclasm, reason has seemed to go to the extreme of atheism and anarchy, it is no less true that the remedy for the dangers of rationalism is more rationalism. In any event, the consequences of rationalism are a burden that mankind will have to bear, and any institution that reserves its fundamental principles from the criticism of the school because of its fear of the logical attitudes assumed by that institution will, by such a policy, ultimately destroy its prestige and influence.

CHAPTER XVI

THE FUNCTION OF THE SCHOOL

SECTION 52. *The examination conception of education*

The function of the school as selection (1) of individuals according to social fitness, (2) of the matter of social heredity

THE school may be defined as the institution through which a community consciously endeavors to transmit to the young their social heredity. It began with the humble function of handing on literacy and uncritical tradition, but it constantly grew in influence, extent of culture, and independence until it has come, as we have seen, practically to control the educative function. In the course of that evolution it has performed two kinds of service. The first is that of selecting or testing individuals according to the standards of society; the second is that of selecting from among the available materials for education that which is regarded as most adapted to the training of all or of each. The function of selecting individuals for society gives rise to the examination conception of education. The individual is tested, it may be once, or, as is more common, at various stages, or, perhaps, continuously during childhood in order to ascertain his fitness for society in general, or for official position, or to determine his relative rank or reputation, or his special aptitude for this or that pursuit. Society finds in conscious education an agency for social control, and the first task of control is that of selecting, grading, and assigning to each the status that most conserves the interests of society as a whole, or of the governing classes. The second function, that of determining the nature of the training of each, is, indeed, not separated from the function of examination, but is,

nevertheless, distinct from it, and should be dealt with apart. It is of small importance so long as the materials of culture are meager, but becomes of vital significance when these materials accumulate so that a struggle for existence arises among them.

The school like the environment in being not creative but selective of power

It may be objected that the view that the function of the school is selective places the emphasis on aspects that are merely negative or incidental, and neglects the fundamental function, which some may hold to be a positive one, and to consist either in actually transmitting to the young the social heredity that they need, or in cultivating to a state of efficiency their powers. In reply, it may be said that these supposedly positive effects of education are in reality negative or selective in character. Throughout the preceding discussions it has been constantly maintained that all positive growth comes from within. The powers of the individual emerge from potentialities the mystery of which cannot in the least be traced to the environmental conditions that determine their survival. The education of the individual, so far as this is to be regarded as a process of external determination of his development, is merely selective. This power is suffered to expand, that one is eliminated. The school merely constitutes an environment favoring the growth of certain tendencies and the suppression of others. This selective function is, indeed, of great importance. We have seen that it everywhere constitutes the function of the environment. When assumed by the individual, it takes the form of feeling and judgment. It characterizes the mode of operation of such educative processes as imitation and the use of language. Through these forms it so enormously facilitates the progress of the individual toward efficiency that it is not surprising that they should seem like positive sources of growth, rather than merely as permissive or directive agencies. Nevertheless, they are such, and the school, as the institution that constitutes the typical expression of the edu-

cative function, is fundamentally an instrumentality by which the function of selection in individual development may, so far as it is exercised by society, be specialized and controlled.

The function of selecting or grading the young is a very old one in the history of social control. So long as society was weak and the conditions of individual life insecure, parental and social fosterage were capable of saving only those children who possessed superiority of physical and mental endowment. Increase in social efficiency, as has been seen, tends to eliminate the influence of natural selection. The weak, the inefficient are preserved, owing to the strength of the social bond. On the other hand, such consequences tend to diminish the total efficiency of society, with the result that the community that is too kind to its own finds itself at a disadvantage in the struggle for existence with sterner communities. In order that a community may preserve its efficiency, while at the same time its moral code continues to antagonize that great though terrible ally of organic health, natural selection, new counter-agencies must be invented. A prominent one is infanticide, quite commonly practiced among primitive men or in early civilizations. Through this means society is rid of superfluous young. The burden of the support of any save those that are necessary to ensure the continuance of the tribe is removed. Perhaps the females may be the ones selected for destruction, the group relying on stealing its wives from some other race, — a method made practicable because of its greater efficiency in war. Such conditions are held to give rise to exogamy.[1] In some cases the community may keep alive just enough women to ensure the continuance of the stock. This practice is, doubtless, widespread, and probably finds at least partial exemplification in China. Where male as well as female infanticide prevails, there may be a careful selection for sur-

Rise of social selection of children. Infanticide

[1] Compare M'Lennan, *Primitive Marriage.*

vival of those physically well endowed, the rest being abandoned, as at Sparta.

Social selection in the exercises o adolescence

Infanticide sanctioned by the moral standards of the people is perfectly consistent with a high degree of fosterage and culture of those children who are allowed to live. Such conscious selection for survival is, doubtless, a more constant factor for improving the stock than is natural selection, at any rate so far as external and easily observed characteristics are concerned. It constitutes the most primitive exercise of the selective function that society displays. A second example of such activity is to be found in the special exercises of adolescence. Here society determines the fitness of the young man or woman for admission to adult membership. Such selection becomes especially significant when society develops offices and rank. Here the prize of the manhood examination may be a sort of a patent of nobility. In the case of the Athenians this examination involved an investigation into parentage, since rank depended largely on birth as well as on individual qualifications. With more primitive peoples leadership may depend on the ordeal, as with the Indians of Columbia and the Caribs.[1] The public educational system of China is a highly developed memory ordeal, to pass which men may spend a lifetime in study. For those who are successful in these examinations there are the rewards of aristocratic honors and privileges and official position with its natural consequence, wealth.

Eliminative *versus* differentiating selection in ec ucational practice

The sort of selection that we have so far discussed may, perhaps, be properly called eliminative selection. The individual who fails is by it shut out from certain prizes, — life, citizenship, honors and privileges, office. It aims to separate the approved from those less fortunate, and in some cases to grade those who succeed. The Republic of Plato sets forth a scheme which involves an endeavor to segregate men on the

[1] Compare *Letourneau, L'Évolution d'Éducation.*

basis of the *sort* of talent that they display. Differentiation thus becomes something more than mere grading. It is true, Plato places the learned class at the top, followed by the military class, and they in turn by the commercial and industrial class. Moreover, he would determine those who are to be in the lower orders by their lack of the intelligence or of the spirit that enables one to be a sage or a warrior. On the other hand, he gives us the hint that these lower classes have special abilities. They are not merely to be characterized as lacking in something. They have positive virtues in which they excel. The determination of these may well be a purpose of education, and such selection we may call differentiating rather than eliminative. It aims not so much to grade, as to find out that for which each is especially fitted. It takes account of the fact that men differ not merely in degree, but also in kind of talent. An adequate method for differentiating selection is undoubtedly one of the great desiderata in modern education.

Eliminative selection in the modern school. Inadequacy of its tests of ability

Eliminative selection has not disappeared from the modern school.[1] The old-fashioned classical course was an admirable agency for separating the intellectually weak from the intellectually strong. Those who accuse it of having accomplished no other service cannot deny that it offered to those who might wish to know a fair rating of the mental power and perseverance of the pupil. Some such rating is, of course, necessary, if the community is to employ intelligently the services of the individual. On the other hand, the judgment of the school, as based on the power to master Latin, Greek, and mathematics, is frequently at fault, and the community has come to discount it. The conviction exists that success may be gained by many kinds of ability which these subjects do not test. Moreover, just as the one who fails in school may

[1] Compare Thorndike, *Educational Psychology*, Ch. IX, "The Influence of Selection."

succeed in life, so the one who succeeds in school may fail in life. Some qualities quite essential to independent enterprise this old-fashioned curriculum took no pains to call into question.

School tests should be like those of life

Thus while the rating of the school has value, it is by no means a certain index to the uses of those who have been subjected to it. The main difficulty lies in the fact that the work used to test ability is not the same in character as that in which this ability will later on prove useful. It is evident that the course of study best adapted to offer a reliable ranking of its students is one that best prepares them for the careers in which their powers are to be employed. The school that can examine most accurately is the one that educates most efficiently. The function of eliminating or grading selection should therefore be subordinated to that of education, not merely because culture is more important than valuation, but also because effective valuation can best be obtained as a by-product of effective culture.

Differentiating selection more important than eliminative. Its neglect

A school that prepares well for life is not only most reliable in grading its pupils, but also most capable of differentiating them. This function of determining the special aptitudes and tastes of the child as a basis for th selection of his calling is undoubtedly far more important for the community, as well as for the child, than is that of giving him a rating in general ability. To help the individual "to find himself," although it has been vaguely in the minds of teachers for ages, is now first coming to be recognized as worthy to be made a conscious aim of the school, — if, indeed, it should not be fundamental in certain phases of school work. There can be little doubt that the teachers have emphasized altogether too much the business of grading and determining relative rank, and altogether too little that of differentiating the children on the basis of their specific aptitudes.

The reason for this neglect in the United States

The causes of this are not difficult to discern. Our course of study has until the latter part of the nineteenth century been barren on the vocational side. This feature is still largely undeveloped. Moreover, the liberal course of study in the United States is a heterogeneous compound, put together on the idea that public education in a democracy should provide for all equally and give to each the best. This has been interpreted to mean that we should give all the same education, and that this should be one which aims at careers of political or social leadership, — at the learned professions and aristocratic life. We have avoided the European system, where the elementary school is for the common people, and completes their education, but does not lead into the secondary school, which is for the aristocracy and the professional classes. Instead, we have been building up our boasted "continuous ladder," where elementary school leads into high school, and this in turn into college. Our system does not, like the European one, differentiate children on the basis of parentage, but rather on that of ability. On the other hand, since it leads designedly toward the learned professions, it merely eliminates those not fitted for such a career. We give a far better chance than does Europe for the lad of humble *birth* to become a professional man, but we do not so carefully see to it that the lad of humble *talent* shall be able to find his calling and prepare for it. If the pupil cannot profit from the excellent training that we provide, we simply drop him out and let him go his way.

In recent years the problems of elimination of pupils from the upper grades of the grammar school and the high school, and of providing more adequate vocational training, have come to the front. This widespread interest practically insures an adequate provision for vocational instruction at no very distant day. In the meantime, it will be necessary to reconstruct our continuous ladder so that it will lead naturally and easily into

whatever vocational instruction a child is best fitted to undertake. The mere existence of educational facilities for all vocations does not mean that children will properly select the work they choose to do. If the school does not undertake the task of providing intelligent guidance in the matter, it will be left largely to chance. The student of fair ability is apt to become interested in the work that is first called to his attention, and, if no broader experience be given, he may continue to specialize therein, when there are many other occupations in which he might have shown superior skill, had the proper measures been taken to evoke his interest in them. A system that trusts to the preferences of the students in the selection of specialized training is liable to the common criticism on the elective system, — that it puts in place of the experience of age the whims of callow youth. That these are unreliable in choosing a career is certain. They are not entirely trustworthy in selecting a wife. It is not merely that the pleasure-loving child avoids many severer lines of training that are necessary or valuable as a preparation for any manner of life, but rather that what he prefers is a result of a mere caprice, and is not determined by a thorough exploitation of his abilities and interests.

Need of school guidance in the selection of a specialty

We may say, then, that the function of the school is primarily selective. It selects or examines the child with reference to social service, and selects the features of social heredity that can most wisely be retained. The function of examination takes two forms. It may be either eliminative, or grading, selection or differentiating selection. Eliminative selection excludes some and admits others to social protection, citizenship, privileges, honors, offices, etc. This service is apparently a necessary one. However, it can be best performed by a school which effectively prepares for all the forms of adult activity through which success can be gained. Such a school

Summary

is in a position to undertake the far more important task of differentiating selection, — *i.e.*, of helping the individual to enter into that vocation which is best suited to his abilities. Our own educational system needs to become less one of eliminative and more one of differentiating selection. This requires not only that it should offer in rich profusion courses preparatory to all phases of life, but also that a special phase of school life should be devoted to the task of helping the pupil "to find himself."

Section 53. *The function of secondary education*

Primary function of secondary education that of differentiating selection

It is evident that the European method of trusting to heredity to determine the vocation is more likely to result in a proper selection than the mere chance decision of the inexperienced child. If our democratic education is really to do justice to the individual and to make for the highest efficiency of society, it must attend carefully to the task of "putting the round pegs in the round holes and the square pegs in the square holes." It will be the contention of this discussion that the problem of determining the career of the child is the primary function of what is known as secondary education. The considerations that lead to this conclusion are partly psychological and partly historical.

Psychological reason for this

From the point of view of psychology, it may be said that the secondary school is the school of the adolescent, and that adolescence is the time for choosing one's life work. We have already indicated [1] that this period may be called an age of independence, as contrasted with the epoch of elementary education, which may be called an age of rivalry. During this earlier period the coercive pressure of society becomes the all-powerful influence. Judgment is continually exercised

[1] Compare § 46.

upon the problem of meeting the approval of this or that individual or social group. But with growing experience the child becomes aware of different standards, different ideals. Society does not constitute a unit in its judgments. Among these varying standards the child must choose, and the sense of this task, and that it devolves upon himself, ushers in the age of independence, or intellectual adolescence. This period usually dawns at the time when physiological adolescence is in its beginnings. If we apply these considerations to the school, it would seem that during the age of rivalry the child should be given those essentials, whether in the way of habits or information, that society demands of each. This includes the three "R's," expanded to meet the demands of modern life. The extent to which the child will at this age submit to social pressure makes it preëminently a time for drill, for uniformity, and for fundamentals. This does not mean that elementary school work should depend entirely, or even largely, upon such pressure. It should be as full of immediate interest as it can be made. It should be as rich in broad content studies and in appeals to the special tastes of children and of the particular child as is consistent with its fundamental function of giving the indispensable. This last it must do, not merely because the indispensable comes first, but because the age of elementary education is an age of struggle to conform, when results that must be obtained can, if no other way lies open, usually be gained by bringing to bear upon the child the approval or disapproval of those who have him in charge.

The age of rivalry the time for uniformity and drill

It is unfortunate if the child grows restive and critical of this school pressure before he has gained the fundamentals. For in that event he is likely never to master them. The critical spirit is born of a sense of varying standards of judgment, and of independence in insisting on one's own inclinations or ideals. It is the natural and desirable spirit for the

child who is finishing the task of mastering the uniformities of social heredity and entering upon that of specialization. Its appearance should therefore normally introduce a new sort of school work, work submitted to the judgment of the pupil rather than enforced upon him. The elementary school presents its work and strives to cultivate interest in it, but there is no suggestion that this work is subject to the approval of those who take it.

Adolescence the time for experimenting toward a specialty

At the coming of adolescence, of the age of independence, the child should be ready to undertake the task of experimenting in the various special lines of activity that it appears possible for him to enter. During this age of "storm and stress" the youth is apt to run rapidly from this to that ambition. Many things appeal, and it is, doubtless, well that he should absorb himself in various phases of human activity. Thus he is not only broadened in outlook and sympathy, but is also given that experience from which alone a satisfactory choice of a plan of life can be made. The period over which the process of experimentation should extend varies with the intellectual ability of the individual. Those of greater ability will, doubtless, as a rule take a longer time to choose, inasmuch as they are capable of entering upon vocations that involve a more elaborate training. Since they cannot test their fitness for these higher specialties without doing a little experimental work in the studies that fit for them, the more advanced the specialty, the longer the period over which the work preliminary to the final differentiation must extend.

It follows that, if we designate as secondary all that phase of education which is devoted to the problem of differentiating students according to their special talents, it extends over a much longer period than is commonly supposed, and covers phases of school work that are generally regarded as elementary and higher. Moreover, since differentiation is not a simple

affair, to be accomplished at one step, but is rather a result of successive selections, each narrowing somewhat the field of choice, secondary education may include various schools, the function of which may be said to be that of secondary differentiation. Primary differentiation we may define as the separation of the intellectually capable from those who are mediocre or weak in respect to mental power and perseverance. After six years' work in the elementary school, it is usually possible to rate a pupil fairly well in general mental ability. It is, therefore, possible to separate those who should go on in the severer linguistic, scientific, and mathematical work of the traditional secondary school from those who might safely be expected to fail in them. These weaker minds have ordinarily been eliminated from school during the last two years of the prevailing eight years' elementary course, or, at any rate, early in the high school course.[1] It is evident that a secondary school is necessary which shall introduce them into the kinds of work of which they are capable, and lead them to a point at which they can intelligently select some special trade or occupation, which they may enter by the route of vocational school or apprenticeship. Such a school might well give a certain amount of liberal culture, that should broaden its students as much as their abilities permit, and train them in civic life.

Secondary education should begin after the sixth school year

The lowest grade of secondary school. The general school of industry

This lowest grade of secondary school corresponds fairly well to the general industrial or trade schools that are coming into existence to-day. They do not aim to prepare for vocations, but merely to introduce to such preparation. Nor are they high schools in the proper sense of the term, since they do not give any adequate preparation for college. The typical high school represents the second grade of secondary school. There is good reason for supposing that its work might properly

Second grade of secondary school. The high school

[1] Compare *The Elimination of Pupils from School:* Thorndike; U. S. Bureau of Ed., Bulletin No. 4, 1907.

begin after the sixth school year. In that event, the elementary course for all would cover six years. The primary task of the high school should be to determine whether the student may or may not wisely aim to reach one of the higher professions. Certain subjects, languages, civics, science, and mathematics, which form the substance of the prevailing high school course, will serve as tests of those sorts of ability without which, it may justly be said, no student can properly qualify for any learned or scientific profession. Those who are eliminated as a result of failure in these subjects should find in the high school such courses as will give them the proper foundation for selecting a vocational school in which to complete their education. It may be assumed that they will drift into the intermediate positions in trade and industry. To supply their need, therefore, the high school should present work of the manual training and commercial type.

Highest grade of secondary school. The college

The completion of the college preparatory course does not for those who are to enter the higher professions conclude their work of experimental study. For it yet remains to select the special profession. Very few high school graduates are in a position to decide this. Very many have as yet decidedly hazy ideas about what they wish to do. The traditional college course is, properly speaking, a secondary course, at least in its earlier years. If it be held that such a course is necessary as a preliminary to a choice of a profession, the secondary course leading to this sphere of life would cover eight years, four in the high school and four in the college. It will be noted, however, that, since two years are cut from the present elementary course, the entire period of training up to the time of entering the professional school is two years shorter than it is at present for those who take the college course. On the other hand, the professional work, which in many institutions enters quite considerably into the collegiate course, is, by virtue of its

exclusion from secondary education, shut out from the college work of the scheme here presented.

Function of higher education that of vocational training. Secondary and higher education should be universal

Each of these proposed divisions of secondary education, the general industrial school, the high school, and the college, leads into a further phase of education, — that devoted to specific preparation for a vocation. This we may call higher education, which includes the lowest vocational schools as well as those concerned in the highest professions. Thus practically every child will by this plan pass through elementary, secondary, and higher education. All will receive the same course of training in the elementary school. All will get a chance to exploit their tastes and abilities in the secondary school, and all will be prepared for some specific vocation in the higher school. Only by means of some such an arrangement can the function of differentiating selection be properly performed by the school, and it would seem to offer that substantial equality of educational opportunity which is the ideal of the school in a democracy.

The experimental subject as characteristic of the secondary school

The characteristic feature of a school that aims at differentiating selection is the presence of the experimental subject. Such work possesses two functions. It serves to broaden the horizon and to test the pupil's aptitudes. It may be assumed that by far the larger part of the work that is necessary to give one the breadth and catholicity of view expected of the well educated is involved in such studies as also function in determining one's specialty. The experimental subject will, therefore, because it is necessary both for general culture and as a means of "finding" one's self, be not elective but prescribed. Thus the extent of election is diminished and that of prescription is increased. Election becomes primarily selection of general courses of study according to preferences that are based on an adequate demonstration of interests and powers. Within such courses the work should be quite gen-

Fields of prescription and election

erally prescribed. In general, therefore, prescription should include (1) the fundamentals of culture indispensable to all; (2) experimental work sufficient to demonstrate the special powers of the individual; and (3) the training necessary to prepare for a vocation. Election should include, (1) the specialty which the student under the advice of the school and after having completed the prescribed experimental work regards as most desirable; and (2) such free electives as appeal to his tastes, but lie outside the line of work which he has already selected as a specialty. This second type of elective work would, of course, be connected largely with the later phases of secondary education or with the course in the vocational school. The desirability of keeping alive broader interests after the initiation of professional work proper would seem to justify the requirement of a certain amount of such free elective work as a condition for secondary and higher degrees and diplomas.

Passing and honor grades in experimental subjects

The work of the students in experimental subjects should probably be graded in a special way. On the one hand, there should be a standard of passing, which is sufficiently low to be attained by practically every properly industrious individual whose ability enables him to get on far enough to reach the subject. Such a grade might be construed as permission to drop the subject, whereas a failure to pass, since it implies some defect in application, would mean that the subject must be taken over as a condition of continuance in the school, or, at least, of graduation therefrom. On the other hand, there should be an honor mark, signifying such excellence as permits and encourages the continuance of the recipient in more advanced work of the same character. Thus the marking in experimental work gains a practical value as a guide, and often a constraining force toward the selection of the specialty for which the individual is fitted.

Purposes of secondary education since the Renaissance:

The history of secondary education shows a drift toward the function that we have here assigned to it. Since the Renaissance the secondary school may be said to have had three distinct purposes, and to have dimly adumbrated a fourth. First of all, it has aimed at liberal culture, then, at preparing for college. Of late, it has endeavored to undertake the task of preparing for life, and so of becoming to a considerable extent a school for vocational training. Experience with this work has led to the conviction that it should give, not vocational training, but rather certain foundations that underlie a number of vocations. It is forced to confine its work to these because its students are for the most part floundering about in search of what they want, and incapable for lack of adequate experience of making an intelligent choice.

(1) social and civic culture;

The secondary school began as an institution to provide for the aristocracy a culture valuable for leadership and for leisure. It prepared for polite social life, for diplomacy, for the appreciation of literature or art or philosophy or science for its own sake. All these aims are psychologically related to adolescence, because at this time the growth of social interest and of devotion to ideals reaches its climax. It is true that the secondary programs have been so conservatively guarded that they have often appeared antiquated, and to serve as little more than a device to bring the youth into an intercourse that has been of great value as a means of social training. Nevertheless, social and civic culture remains to-day one of the principal functions of secondary education, and, doubtless, a permanent one. The subsidiary playful activities of the students will combine with a considerable part of the curriculum to contribute toward this result.

(2) assumption of the function of preparing

In the course of time, the secondary school came to be largely concerned in preparing for higher institutions of learning. At the Renaissance it was very imperfectly related to the uni-

for university or college

versity. Indeed, it was a rival institution, offering a considerably modified course of study in response to a newly developed demand on the part of the aristocracy and the middle classes. The expansion of university work led the secondary schools to drop into the position of preparing for them. This transformation is especially in evidence in the United States, where the academies and high schools, which in the beginning of their history offered what seemed then like a fairly complete liberal course, paralleling and in certain respects even surpassing that of the college, have sunk back into preparatory schools. Thus our continuous ladder has been perfected, at the cost of leaving out of consideration provision for differentiation.

Revolt against the preparatory school ideal

For over a decade there has been going on a vigorous revolt against this conception. The spread of the secondary schools into all parts of the country, involving an enormous increase in attendance, has brought before the public attention the problem of satisfactory training for that vast majority of high school students who do not reach the college. The high rate of elimination during the first and second years of the high school course suggests that the existing program does not meet the needs of most of those who enter upon it. The result has been the growth of an independent spirit on the part of the high schools. Since the number of students who go to college is small, they have come to feel that their main problem is that of preparing the rest for life. They have been building up courses in commerce and industry, and have drifted rapidly toward vocational training.

(3) Rise of the ideal of preparing for life

The high school student not prepared to select a vocation

We have seen that endeavors in this direction have been compelled to submit to amendment because those entering the high schools are not yet ready to select a vocation. The secondary schools must continue to be preparatory. But it is far from necessary that they should confine themselves to

preparing for college, or even for the professional schools. Indeed, it is of the greatest importance that they should come to regard as their most important function that of leading each student into that vocational or professional school for which he is best fitted by nature.

(4) The present tendency toward a differentiating rather than a vocational course

Thus the tendency in secondary education seems to be toward the assumption of the function of differentiating selection as its main service. This function is especially important in the education of the adolescent, and it should probably begin to dominate school work as early as the seventh year. Here, then, secondary education should begin, and there are many signs that the elementary school of the future will offer only a six years' course. To make this practicable it is necessary to have the secondary system completed by the addition of the general industrial school to take charge of the fortunes of those who are manifestly ill adapted to the high school. Differentiation on the basis of general ability will separate those who go to the general industrial school from those who go to the high school, and again, those who go from the high school into special vocational schools from those who go to college. The function of differentiation on the basis of special abilities will be performed for one group by the general industrial school, for a second, by the courses in commerce and industry in the high schools, and for the professional classes, by the college. In many features this plan is in existence today. General or intermediate industrial schools to care for those who drop out of grammar or high schools are coming into existence. The high schools are expanding their courses to bring them in touch with the vocations, yet they are being driven to differentiate their work from that of the special vocational schools. They are encroaching upon the liberal studies of the college, on the one hand, and reaching down to take in the brightest children of the upper grammar grades, on the

other. They are thus not only expanding, but also extending their course. The colleges are struggling with the problems of introducing professional work which will count for a degree, of cutting down the time of the regular course, of adapting their programs to the needs of to-day. More than ever it is evident that the work of their two first years belongs, where it is placed in Europe, in the scheme of secondary education. On the other hand, the American college is likely to remain distinct from the high school, since there is need of a specific institution to introduce to the study of the professions.

Section 54. *The school as determinative of social heredity*

The standards of examination as the approved social heredity

We have seen that the school not only examines the individual with reference both to general fitness for social service and to special aptitudes, but also selects the material that shall enter into the culture of all and each. Thus it determines social heredity, eliminating the useless and the antiquated, and prescribing that which the judgment of its leaders regards as making for the highest efficiency of the individual and of society. However, in its earlier stages social heredity is an exceedingly inflexible affair.[1] The school in determining it merely conserves the established practices, adding the weight of its influence to the forces making for permanence. Moreover, the function of instruction is at first largely bound up in that of examination. It is in setting a standard by conforming to which the child wins the approval of school and so of society that the school determines the habits, ideas, and ideals of the young. At first, it is not so much concerned in questioning the worth of its standards as in determining by means of them the worth of the individual. Eliminating the unfit, selecting, grading, absorb the attention of teachers, and the standards of tradition are uncritically assumed.

[1] Compare § 10.

The shifting of attention from exclusive devotion to the task of eliminative selection over to that of selecting social heredity comes as a result of the accumulation of materials of culture. The growth of the content of social heredity is inevitable unless conservatism sets about resolutely to check it. The rise of such a warfare upon innovation is the first form of a conscious endeavor on the part of the school to control the subject matter of the education of the young. This attitude would, however, seem to preclude any advance to a rational determination of social heredity, thus smothering this function in its infancy. On the other hand, the forces, both internal and external, that make for progress[1] ultimately compel a reconstruction of the culture material. The control of this reconstruction, like that of the earlier conservation, must be exercised either by or through the school.

The accumulation of culture and the rise of conscious selection

The development of independence on the part of the school in the exercise of this function is the growth of academic freedom, which was considered in the last chapter. This result has been, as we have seen, the achievement of the modern democratic state, the state that aims to be free from the control of privileged classes. In primitive society the school expressed in its instruction the ingrained conservatism of this epoch of culture. The group possessed but one type of education, and its fitness was questioned by none. Civilization came by the route of the warfare of cultures, and the formation of the composite state with various classes, each having its own culture, one dominant, the others subordinate.[2] In such a condition the school continues conservative, for it expresses the wishes of a ruling class that strives to preserve its privileges. The school determines social heredity, but in subjection to the will of a class.

Early conservatism and subordination of the school in its work

There is one feature of this composite society that is of

[1] Compare § 39.

[2] Compare § 14.

Specialized cultures in classified society

great importance in reference to the future function of the school. It is a social order that involves not one culture, but many, and, although one is recognized as best, each comes to require a special sort of talent. Thus we have the rise of specialization, and specialization creates for the school, when once a democratic society has decided against the assignment of specialties according to birth, the problem of differentiating selection.

When once the forces that undermine the conservatism of early culture have succeeded in creating so much material that it becomes necessary for selection to reduce this to such proportions as can be contained in a practicable course of study, then the problem of determining social heredity becomes a vital one for the school. If the individual cannot be trusted to select that which he is best fitted to do unless he has the active, and, indeed, the coercive assistance of the school, neither can society expect any rational determination of the course of study so long as the teachers are dependent in this function upon the wishes of any class or party. Academic freedom is the only condition of an efficient, progressive, and fair control of the work of education. This proposition has been debated at length in the preceding chapter. Here it remains to outline the method by which authority in the school and freedom in the child may, so far as the course of study is concerned, be made to work together most efficiently.

Academic freedom as the basis of rational selection of social heredity

Authority in the school as the basis of freedom in the child

A certain authoritativeness on the part of the school, so far from repressing the individuality, as many think it is likely to do,[1] may become the foundation of the highest degree of freedom. Freedom consists in achievement along lines that seem to the individual worth while. It is, therefore, based on the experience that gives one a trustworthy sense of values,

[1] Thus Herbart (*Applications of Psychology to Education*, Letter XXXII) and Spencer (*National Education*) fear state control as too authoritative.

and upon the knowledge and skill that enables him to be effective in the world of men. In both these respects the guidance of the school is indispensable. It must compel all to get certain fundamentals of culture. It must require each to submit to its prescriptions and tests before admitting him to such studies as he feels called to elect as a specialty. So far as free electives are concerned, it should permit the maximum of election consistent with efficiency, but must determine the electives that are worth while and shut out the others. It should, above all, continually experiment on new methods of teaching and new courses or materials for instruction. But it will not content itself with offering this experimental work, trusting to its appeal to parent or pupil as a measure of its success. On the contrary, a constant endeavor will be made to determine the success or failure of these experiments by collecting data in regard to their effects over long ranges of time. Thus survival will be made to depend upon intelligent selection rather than upon individual preferences founded upon caprice or imperfect evidence, and incapable of definitely and finally determining to the satisfaction of all any educational values.

The school program as the outcome of experiment

The progressive school will, therefore, not be, as Mr. Spencer thinks, the school that offers to the individual anything that he may chance to want. The free play of individuality without any adequate selective agency to determine which of the products of such activity shall survive does not lead to progress. The experiments of the school will be under the direction of the school itself, rather than under that of pupil or parent. The creativeness that is intrusted with the task of improving social heredity will not be that of immature or inexperienced childhood or of men whose training makes them expert in other than educational matters, but it will be that of the leaders among the teachers themselves. The decisions

that the school reaches will be embodied in the program that it gradually evolves. This program will, of course, have to be accepted by the public, but it will be sufficiently elastic to permit the adequate expression of individuality. A protest on the part of parent or child or society in general against what the school offers can be met either by the inauguration of a new experiment or by a reference to the data in regard to the failure of previous ones.

In the previous chapter it was pointed out that academic freedom must be safeguarded by such checks as insure the constant attention of the school to those needs of social life which it is the province of education to supply. Historically the teachers have always concerned themselves with greater or less success, not only in preserving, but also in bettering the ideals of society. They have preached a gospel of the higher life, which in many cases seems to have divorced them from practical affairs. In modern times they have become interested not only in improving the *morale* of society, but also in inventing better methods of bringing about generally recognized aims. The school reflects the attitude of the time in its conception of its duty. Our universities were not at first centers of scientific research. This was because society itself was slow in realizing the need of becoming consciously progressive in matters of knowledge. Once alive to that need, and its accredited organ, the school, becomes the natural agency to carry on this function. To-day the university is the home of research. Again, the task of applying science to the arts of life was for many years left to outsiders, to practical men, and the universities contented themselves with researches that, instead of aiming at improving human conditions in material ways, were animated solely by the desire of extending the bounds of human knowledge. To-day it is safe to say that the inventor, the expert in the application of science to any

The school as the home of research and invention

phase of practice, is rapidly coming to find his home in the professional departments of the higher institutions of learning. Here he may find an assured income for support, and resources for experimentation that are adequate. Moreover, the results of his research are not private monopolies to be exploited by clever business men for their own profit, but can be utilized by all. We are coming to see that progress in efficiency is far more swift and effective when supported by special agencies that are incorporated in the school, than when it is left merely to the interests of private enterprise. The assumption of responsibility for the betterment of social heredity will remove the last argument against intrusting to the school the authority to determine what its content shall be.

Conclusion

Our main contentions are, then, first, that the function of determining social heredity cannot be avoided by the school; second, that it exercises this function in a manner which expresses the dominant spirit and tendencies of the society of the age; third, that if the age be progressive, a powerful, independent, and resourceful school will direct and accelerate that progress far more effectively than a weak and dependent one.

CHAPTER XVII

THE ACADEMIC AND THE PRACTICAL

SECTION 55. *The evolution of the academic*

Variety of the academic interests

WE have defined the "academic" as a form of culture pursued for its own sake and without reference to practical application. Religion, philosophy, ethics, science, art, even business, may tend to become "academic." By a strange paradox, the man of intense worldly activity may come to regard this activity as valuable without reference to its relation to human life as a whole, and so become "academic" in the universal sense of the term. He may get things done just for the sake of getting them done. He may glorify *busy-ness*. He may be intoxicated with the desire to make money without reference to its uses. He may absorb himself in a life of mere strenuousness, and so become as genuinely "academic" as Plato himself.

Restriction of the school to the academic. Its willingness to devote itself to this

This universal meaning of the term must be kept in mind whenever the relation of the academic to the practical is considered. However, since the great historic academic interests are those of religion, philosophy, science, ethics, and art, we will in the present section limit ourselves to them. We have already taken account of what may be called the negative reason for the devotion of the school to unworldly aims.[1] Only at the price of restricting its investigations and its teaching to academic issues was this institution able to gain freedom in these matters. However, if this were the only reason for

[1] Compare § 50.

the devotion of the school to the academic, its attitude would be, indeed, inglorious. Such an explanation cannot account for the enthusiasm of schoolmen about the pursuits that absorb them. There must be positive reasons that lie back of the extraordinary prestige that the ideals of truth, beauty, and goodness have enjoyed and still enjoy in the minds of men. These positive reasons it is the purpose of this section to consider.

Instinctive basis of the academic attitude

It is probable that the love both of knowledge and of beauty find their roots in instinct. Instinctive curiosity lies back of the philosophic and scientific ideal, and æsthetic taste is grounded in native love of rhythm, harmony of form, melody, etc. In the early history of man, however, these instincts served a use that it was not difficult to detect. Primitive intellectual and artistic interests are always close to the utilities. Intelligence was at first so absorbed in the dire problem of satisfying the simplest human needs that it could hardly devote itself to academic ideals. Religion, philosophy, art, and ethics are in their beginnings eminently practical and worldly. They become academic by virtue of an inner growth, the main phases of which can readily be seen.

Utilitarian character of early culture

Religion at first utilitarian

If we begin with religion, we discover that as soon as the human mind began to make its incursions into the realm of the supernatural, it proceeded to put to use its superstitions. The intellect of the individual discovers outside himself other personality, endowed with interests and power to realize them. The volitions of these persons explain much of that which otherwise would seem utterly unaccountable, because so irregular and capricious. He naturally extends this explanation to account for everything that rouses wonder by varying from the customary, and the will of a person is seen behind each unusual event. Especially is this true of those phenomena that affect human welfare. Man's experience of the benefi-

cence of human friendship and of the terrible consequences of human hate is so intense that he cannot fail to discover these motives behind the good and the evil that come from nature. Thus imagination, unchecked by scientific tests, sees the volitions of supernatural beings behind all the important events in the natural world, and cunning strives to ascertain the intentions of these wills, and, perchance, to influence them to serve the welfare of the self or of the social group.

Rise of the contrast between temporal and eternal power

The interest of primitive man in the attitudes of gods and demons is continually deepened by the magnitude of the forces that these beings are supposed to control. All that the intelligence or power of man can accomplish is as nothing in the hands of the mysterious agencies that govern the supply of game, the rain, the crops, disease, and health, the outcome of conflict, in short, everything but that narrow circle of events that receives some feeble light from human insight and falls directly under the grip of human will. Thus to know the will of the gods becomes the most important knowledge, and to be able to influence it the most important power. Moreover, as human memory is strengthened by oral and at length by written tradition, the sense of the limitations of human foresight and the transitory nature of human effort becomes even greater. Man may do a little now, but that little becomes infinitesimal when we consider how quickly it disappears. The gods, who are all-powerful, are by an inevitable logic endowed with immortality. They are the eternal forces. Man's activity is temporal, fleeting, insignificant. The endeavor of the imagination to invent a being worthy of the feeling of awe with which the human mind confronts the everlasting is, doubtless, one of the psychical factors that leads to the sublime generalization of Monotheism.

Worship as the leading

It is plain that the absorption of the mind in the task of winning the favor of the supernatural powers tends to draw

it away from the endeavor to master nature directly. The consciousness of the magnitude of the unknown and of the apparent helplessness of human ability to master it leads man to seek the desired things mainly through the forms of worship. However, the responses of the gods to prayer and sacrifice, or to neglect, insult, and the spoliation of their temples are not always immediate or certain. Often it seems as though a deity had failed to remember his followers, or was bestowing favors with no regard to service. Thus men became convinced that "it rains alike on the just and the unjust," and the patience of Job is necessary to preserve faith in the midst of the strange dispensations of an incomprehensible Providence. Under such conditions the human mind naturally takes refuge in the thought that to an everlasting God the events of human life are not of such significance as they seem to man. What to man, limited in vision to the years of a life, appears as vitally important, to God, who knows eternity, seems as trivial. What man regards as injustice, God intends as discipline. "Whom the Lord loveth, He chasteneth." Thus man begins to lose confidence, not only in his power over nature, but also in the accuracy of his judgment in regard to what constitutes practical success. After all, life is full of vanities, with which God cannot be supposed to have much sympathy. We are in His hands; what need to worry over worldly failure or success? The important things are the things of eternity.

method of success. Its failure in this rôle

Contrast between eternal and worldly values

Thus religious belief, leading man to strive to gain his ends by the intervention of the gods, turns the attention away from the directly to the indirectly practical. Then, through the failure of such practice to gain what is expected, it causes him to despise practical considerations as of no permanent importance. A similar devotion to the academic appears in the development of philosophy and science. Philosophy, of which science is an offshoot, has been from its beginnings an endeavor

Rise of academic religion

Early philosophy a practical art

to rationalize life, to adapt conduct to permanent rather than temporary conditions, and to do this by getting at the deeper meanings of things, on the one hand, and by conforming human attitudes to them, on the other. Thus it has always been associated with effective practice. The philosopher was traditionally the wise man, the man who penetrated to ultimate causes and regulated his life thereby, one who knew the motives of men and how to manage them and to give them laws, one who knew the properties of natural things and could use them to accomplish remarkable things like the cure of disease, the prediction of eclipses, the invention of engines of war.

Philosophy as the study of the permanent nature of things

Philosophy springs from religious speculation. The continued reflection on the causes of things leads thinkers to discover uniformities in nature rather than caprice. Indeed, the volitions of men come to be regarded as subject to law. The philosopher interests himself in the endeavor to formulate the principle or principles that lie behind all the phenomena of experience. The theological character of early philosophy is seen in that these principles are usually regarded as the nature of God. Such a God is, however, not a Being to be influenced by adulation or neglect. He is a Fate, an irreversible law, a permanent behind the transitory phases of experience.

The study of first causes, although calculated, as we have seen, to rationalize life, led man's attention away from the endeavor to control nature through a mastery of her laws. First of all, philosophy possessed no method and had not yet accumulated sufficient data to get acquainted with the more recondite properties of natural things. Hence, its speculations did not result in any very rapid or very startling reconstructions of the methods of attaining the ordinary ambitions of men.

Divorce of the absolute from

This fact made it easier for the mind to discredit the importance of such applications, when once this negative attitude was suggested as a result of the further progress of philosophy.

Second, the contrast between the immutable, which reason demands and finds, and the transitory, which the senses apprehend, led men to believe that there is an impassable chasm between the absolute and the phenomena of experience. The latter came to be regarded as non-being, as unreal, illusory. The senses that tell us that they exist were held to be deceptive. Only reason, which fathoms the nature of the transcendent, the immutable, can, on this view, reach reality, and so be relied upon to tell the truth. The Platonic idealism represents the ultimate outcome of this view. The true reality is held to be the *form*, the universal *idea*. Change is chance, Matter is imperfection, corruption, non-being. Particular things have reality only in so far as they are copies of the idea, — that is, partake of it. The goal of mental and moral activity is to attain knowledge of the idea, to be at one with it in conduct and thought.

the phenomenal of illusory

It is not the purpose of this discussion to enter into a criticism of the Platonic philosophy. One cannot question, however, that interpretation of Platonism which makes the highest occupation of man the search for knowledge for its own sake. The philosopher, the lover of truth, is not worldly, and to the worldly he must seem impractical. He seems impractical because in a sense he is practical, in making his conduct correspond to his theory. He busies himself in the study of that which cannot improve his worldly fortunes. His rule, if he were permitted to rule, would not be opportunism. He would constrain human conduct within the lines of a plan that would consider not the exigencies of the moment, but the pattern of the absolute. Such a man cannot fail to be regarded as impractical. The practicalities of ordinary men are to him futilities. He loves with that sublimated passion which has been called Platonic love the permanent, the perfect, the ideal, the divine. Platonism represents in its most typical form the

Philosophy becomes academic

love of truth for its own sake. Thus we find in the culmination of philosophic speculation among the Greeks an attitude quite comparable to the outcome of religious reflection among the Hebrews and in the Orient. As God transcends the finite and cares little for the fortunes of the hour, having an eternity in which to accomplish His purposes, so reality transcends the sphere of circumstance, and calls the lover of truth away from the unintelligible spectacle of the phenomenal world to the majestic uniformities and permanences of the world of ideas.

Ethics at first concerned in the rules of prudence

Corresponding with these religious and speculative movements, there is an ethical movement the outcome of which is similar. When men first begin to reason about conduct, they naturally assume that it aims at prosperity more or less immediate. As the range of ethical experience widens, they come to substitute more and more remote aims for the simpler ones that lie near at hand. However, it is as yet concrete good fortune at which all conduct aims. One simply gives up the lesser pleasures for the larger success; for power, influence, prestige, wealth, or health he barters the immediate satisfaction of his impulses and appetites.

Failure of prudence to justify its practices

But further reflection convinces the thinker that, no matter how carefully he orders his life, it does not seem possible to assure himself of earthly success. No human power can avail against disease, false friends, the accidents of nature, or the fickleness of society. Prudence, as the rule of rational conduct, seems an utterly inadequate guide. It aims at an end to which it is incapable of attaining. Under these circumstances, the self-control that was originally invoked to enable one to follow the ends held by judgment to be most permanent comes to serve as a force by which men can defy the distribution of favors that the chances of life bring about. Men become cynical, and seek mastery of their fortunes by the negative method of caring only for what they can be sure to get. Or, with the

Stoic, they exalt self-control into a self-sufficient ideal, and declare that "virtue is its own reward." The notion of a duty entirely disconnected either with the fortunes of one's self or of his family or state makes its appearance, and man comes to despise the utilities as calling the interest away from that which is truly good.

Ethics becomes academic

The ethical philosophies of the later days of classical civilization are all somewhat affected by the feeling that the most praiseworthy course of conduct lies in a certain indifference to worldly success. If the Epicurean admonished man to seek happiness, he was certain that this end could best be attained by such culture of character as makes one indifferent to those phases of human fortune which he may be unable to control. To him and to the Skeptic, as well as to the Stoic, the ideal was the untroubled life, the life at peace with itself, and content with whatever lot may befall. Such an attitude is certainly not utilitarian. At most, it merely tolerates the practical, finding in the ideal of reason which regards not specific consequences the supreme law of conduct. Man orders his own life to secure his own contentment, whether with the Epicurean he gets what he can and cares not for the rest, or with the Stoic he values only the ideal of duty, despising the dispensations of fortune when these do not conform to justice.

Academic distrust of utilitarianism

When the human mind in its reflections reaches the religious devotion of a Job, or the speculative zeal of the Platonic idealism, or the lofty self-sufficiency of the Stoic conception of virtue, it is apt to look with suspicion upon any attempt to harness the truth in the service of any alien master. It is felt that to serve God for a reward is not genuine piety. He who is continually seeking the application of truth to practice is set down as not caring for the truth, but only for what he can get out of it. If a lie will serve him better than the truth, it is supposed that he will prefer the lie, or, at any rate, that he will not care

to question any belief which is useful for his ends. No man can get repute as a true philosopher who teaches for pay, for rank, or for influence. Such an one will always be credited with "making the worse appear the better reason," if it serves his purposes to do so. True religion scorns any pious offices that smack of worldly designs. "Render unto Cæsar the things that are Cæsar's, and unto God the things that are God's." The spiritual and the temporal are sharply separated. The value of spiritual well-doing is seen to lie in spiritual betterment. The saints find their reward not in earthly palaces, but in heavenly mansions.

Rise of warfare on the practical

Thus not only do men come to devote themselves to the holy, the true, and the right without regard to their practical uses, but they come to look with disfavor upon any attempt to dabble in the practical. Under such conditions, the "academic," that which pertains to the culture of the school, but does not concern itself with the life outside, gains a prestige that threatens to submerge the interest in the utilitarian. We find the natural outcome of this in the asceticism and mysticism of the Middle Ages. The negations of celibacy, seclusion, poverty, and self-inflicted torment were the natural accompaniments of a conception of life that found the only noble occupation in spiritual contemplation, and the only worthy ultimate goal in the Beatific Vision.

Utilitarian results as the aim of early art. Adornment

In its beginnings art, like religion and ethics, was ostensibly utilitarian. Adornment of the person connects itself ordinarily with a primitive symbolism, indicating honors, status, achievements, etc. The ornamentation of weapons, clothing, baskets, dwellings also springs largely, if not wholly, from an attempt to express significances that have real or supposed value. It is not meant to deny that artistic forms are pleasing to the primitive man apart from their utility. Indeed, the utility of the adornment is partly due to its æsthetic attractiveness.

On the other hand, this æsthetic quality is often due merely to the conventional association of the artistic product with a desirable distinction on the part of the possessor. The meanings and utilities of primitive art are to be found in the social ideals of the people to which it appeals. The artist sets himself to express or symbolize social traditions and values, and he hopes through this expression to gain the influence or prestige connected with these values for himself or for his patron.

Social utility of art

But primitive art does not find its sole utility in glorifying the social status or achievements of the individual or class. It connects itself with play, with tribal enterprises and with religion, and serves the same utilities as they do. We have already discussed how play and religious ceremonial[1] tend to become associated, because both help to socialize men, and because the form of each has no special aptitude for any other clearly defined use. The form of play may be what we choose, just as may that of religious ceremonial. Neither gods nor circumstances will interfere to prevent the freedom of human taste from determining these forms, as long as they are not productive of positive harm to the individual or to the community. Thus æsthetic taste is left in control of the situation, and play and religious ceremonial become its special province. They socialize men, and art helps them in this service by enabling their forms to instill most effectively the social ideals.

As yet, however, the value of the art form is not seen to rest upon its inherent excellence as a means of expression. Ornaments are prized for the distinction that they give their wearers rather than as works of art. Religious ceremonial is held sacred, not because of the beauty with which it expresses the religious attitude, but because it is regarded as acceptable to the gods, and hence likely to win their favor. The growth of art into wider service helps it to gain an independence of these

[1] Compare § 45.

aims, and so of any utilities. Since the artist deals with expression, he grows to be a fundamental force in social control. Wherever man would influence man, art can teach him the most effective way. The artist through song or dance or ceremonial or wild festivity rouses the emotions and dominates public opinion and action. He serves religion to make it mysterious and awful, the state to awaken the enthusiastic support of its citizens, the interests of leaders or of privileged classes by celebrating their heroic deeds, their superior gifts, and their bounty, or by surrounding them with the trappings and the atmosphere that inspire admiration, reverence, and fear. When, with leisure, social intercourse becomes an occupation for a select class, art exerts itself to give this intercourse a form so captivating that it justifies idleness and saves the interest of those upon whom sloth would pall.

Growth of art into a special vocation. Idealization of artistic expression

Thus the creation of effective forms of expression becomes a vocation. The artist is differentiated, as one whose specific task is to fashion the beautiful. At first an inventor of expressions by which society or the individual can exert a desired influence, he comes to be one whose products are seen to have a certain perfection in themselves, as the ideal embodiments of phases of human experience. He ceases to be a servitor, and becomes a master. In the life of cultured leisure he is the high priest, for he can make expression so excellent that it seems to need no utility to warrant its existence. Hence art acquires a certain sanctity. It becomes the perfect revelation, and whether it reveals the evil or the good, the shams or the realities, it matters not, so long as it makes its portraits speak their meaning.

Art becomes academic

In this manner expression comes to be regarded as a thing worth while for its own sake. That which at first existed that it might convey certain meanings came to be regarded as valuable apart from these significances. Not that art can get

along without something to express, but that for it the supreme interest is expression, and that any one whose artistic creations are dominated by a desire to influence the conduct of men in certain practical ways ceases in so far to be an artist, and becomes a preacher, a reformer. Always the ideal of the artist is to keep utilities in the background. The Muses cannot be ordered about as servants. They must be worshiped. To the true artist considerations of the practical effects of his work upon the thought and conduct of men, and of its value as a source of income or prestige to himself, are alike irrelevant and corrupting. No extraneous motives should be suffered to defile the pure devotion to "art for art's sake." Thus this field of human endeavor comes to range itself along with religion and philosophy, science, and ethics as something independent of and, in a sense, apart from the rest of life, a thing of cults and schools, academic rather than practical.

Section 56. *The reaction against the academic*

Worldly respect and contempt for the academic

The practical man of affairs has usually looked upon the devotion of the schoolman to the ideal of the form of culture that he represents with covetous interest, with fear, or with amused toleration. For, first of all, religion, philosophy, and art have a powerful appeal to the human mind, and their wholehearted devotees command a respect that can never be accorded to a worldly man, whose motives seem, as in point of fact they usually are, selfish. Hence the support of the schoolman has always been eagerly sought by men of affairs. If such support can be gained without discrediting the motives of those who afford it, the man of practice gains for his policies the enormous advantage of a seeming justification by men entirely disinterested and by principles absolutely general and impartial. The evolution of academic freedom, while

it has not removed the desire for and the possibility of such support, has tended to put it out of the power of arbitrary commands, and even, to some extent, that of diplomacy or corrupting influences.

But we have seen that academic freedom has usually meant in its beginnings the freedom to think, act, and speak as mind, conscience, or taste might direct, so long as the defenses of established order are not assaulted. In this limitation the practical world shows its fear of the schoolmen, for the prestige that their supposed disinterestedness gives them makes them not only valuable supporters, but also formidable foes. When, however, they are rendered innocuous by restrictions that prevent them from applying their theories or their art to living issues, they are very naturally tolerated as harmless dreamers, or, perhaps, ridiculed as being of no more real importance tha mountebanks or court jesters.

Tendency of academic investigations to affect practice

Nevertheless, academic freedom grows, and the discoveries of the schoolmen accumulate until they constitute a foundation for revolutionary effects. Philosophy, ethics, and science, penned behind the barriers of the school, gain such energy as at length to break down its restrictions and to rush forth to reconstruct the social and economic conditions of men. Ethics gradually allies itself with democracy and fights its way into practice. Invention, hitherto left largely to accident,[1] discovers in the researches of academic science ideas the application of which transforms in a marvelous way industry and the material resources of life. These achievements gradually wean science away from its distrust of the practical, and it lends itself more freely to the service of the utilities.

Persistence of devotion to the academic

However, the prestige of pure science remains proof against both the ridicule of men who are frankly utilitarian and the allurements of practical success, which are everywhere inviting

[1] Compare Bacon, *Advancement of Learning*.

investigators to devote themselves to that which pays. So strong is human interest in the truth, and so great is human admiration for its disinterested pursuit, that the attitude of devotion to the academic cannot be shaken by the contempt of some or by the bribery of others. The discovery that science can be utilized creates applied science, but does not discredit pure science. There are, however, tendencies that ultimately force the school to look to the practical exigencies of life for guidance in both its teaching and its research. That attention to the practical, which could not be compelled by extraneous pressure, is coming now as an inner necessity, a condition of a satisfactory carrying out of its own work by the school itself. The movement that brings about this resort to the utilities consists of an accumulation of learning, and the rise of a struggle for existence among disciplines and cults.

Effects of the tendency for learning to accumulate

The accumulation of learning is partly a cause and partly a result of the differentiation of the learned class. When this learning grows so ponderous in bulk that any further additions threaten the preservation of what has gone before, three alternative lines of action lie open, each of which finds abundant illustration in history. (1) The school may become conservative and refuse to permit new elements of culture to be added to what it already teaches. (2) It may admit new material, and provide for its retention alongside of the old by a resort to specialization. (3) It may undertake to select what should survive, subjecting both new and old culture to tests which eliminate some materials and permit others to remain.

(1) Conservative warfare on the new

(1) The school in its earlier history is conservative not only because society compels it to be so, but also because of natural inclination and self-interest. As disciple succeeds creator, and scholarship and commentary take the place of independent thought and original productiveness, the admiration of the master creates a fear that further originality will be purchased

at the expense of a loss of what he has achieved. Moreover, since the master's work gains in honor as the generations roll by, discipleship comes to have a prestige that cannot be secured by originality, nay, was not enjoyed by the master himself in his own lifetime. Thus conservatism becomes to the schoolman the part of prudence as well as of reverence for the glorious dead.

Attack on this attitude as selfish

This conservatism is, of course, doomed when once there arises a conflicting and more advanced group of ideas. The progressive tendency enjoys the advantage not only of a more forceful appeal to reason, but also of the weakness of its adversaries in that they cannot fail ultimately to be charged with placing personal interest above truth. Thus that prestige which constitutes the original advantage of the conservative decays and proves his ultimate undoing. His faith ceases to be regarded as a sacred respect for the truth, and is held to constitute a disguise for self-interest, if not the garb of a hypocrite. Thus the new philosophy, the new culture, wins its way. But it brings with it a revolutionary spirit, a tendency to be suspicious of traditional belief and vested right that makes it in turn an easier prey to its successor.

The victory over conservatism and the overproduction of culture material

But the advance of intellectual life does not consist merely in substituting one system of thought or culture for another. The body of culture material, when once the check of conservatism is removed, renews its growth. The historical sense demands the preservation of the antecedents of the newer teachings. The classics in literature and philosophy are not less honored in the curriculum because of the introduction of new works of genius. History is continually presenting a broader field and fresh material. Even science, which thinks largely of the "up-to-date," does not lose all interest in the past. Moreover, without reference to its history it continually reaches out in its investigations, and piles up new material

which clamors for admission into that which is taught. Thus the curriculum is swamped.

(2) To permit the school to handle all this material which the breaking down of its conservatism allows a hearing, the method of specialization appears. Many men, many minds. To this conception of culture we have committed ourselves. The days of the polymath are passed. Each must choose one phase of learning, and that a very narrow one, if he would hope to exploit therein the sum of human achievement, and in turn produce. No matter how peculiar the path thus trod, there will probably be some to follow, some to whose taste this sort of scenery will appeal.

(2) Rise of specialization

In order to permit each subject to make its appeal to the judgment and the taste of the individual, the elective system comes to prevail in the school. It strives to offer free play to the forces of differentiation, to do equal justice to all phases of culture, to recognize the new without breaking with the old, to offer equal opportunity to each to develop his own talents according to his own desires. In specialization election finds its current justification and reason for being. It may be said to date from the beginning of differentiation of types of school, although it is commonly associated with the culmination of such differentiation in alternative courses and subjects within the ame school.

The elective system as providing for specialization

(3) But while the ostensible purpose of election lies in the desirability of specialization, the elective system of modern times has had another motive and function. It has served as a means of providing for a struggle for existence among subjects. The result of this struggle is the elimination of some subjects, because they fail to attract a sufficient number of students, and the ranking of those that survive according to the patronage that they receive. As an arrangement to permit specialization, the elective system makes for expansion of the

(3) The elimination of culture material. Election as a method of accomplishing this

course of study; as a scheme for providing a struggle for existence among subjects, it furthers the work of selection in narrowing this course.

The elective system as an appeal to the decision of patronage

The elective system does not mean that the school has undertaken the task of selecting its program from among competing materials. On the contrary, latitude in election is a result of the unwillingness of the school to choose, and of an attempt to thrust this responsibility upon its patrons. This unwillingness may spring from the spirit of commerce, the desire to offer the widest variety of stock, and, in order to make many sales, to persuade each customer that what he seems to fancy is the best. Unfortunately, the subordination of the school to other interests in society has only too often reduced it to the position of selling education according to popular demand. A more creditable motive for leaving the choice among studies to the individual lies in the fact that the school often is unable to determine beforehand what is best. The various subjects and phases of subjects that crowd upon the gate of the curriculum all have plausible reasons for demanding entrance. Each represents some part of the truth. Each appeals to that academic catholicity of appreciation that loves the truth for truth's sake and can see beauty in forms that are not classic.

Apparent resort to the judgment of practice or utility

Thus the multiplication of studies and of cults puts the school under the necessity of providing a means of determining their relative value. Since this can hardly be done with entire satisfaction *a priori*, the elective system enters in as a sort of application of the trial and error method to the problem. The judgment of the event is invoked. But this judgment is that of practice. The academic, unable or unwilling to settle the strife between the competing forms of culture, appeals to the test of practice as a basis for the appraisement of relative values. It abandons its gospel of personal culture, and

seeks to satisfy the demand of the community. It becomes utilitarian.

The school becomes practical primarily to settle the strife of subjects

The growth of the spirit of applied ethics and of applied science has encouraged and sustained the school in its resort to the arbitrament of the practical. But in spite of the enthusiasm which the positive achievements of this spirit, whether in social organization or in invention, have aroused, it is the contention of this discussion that the academic attitude remains unshaken until the struggle among its own products compels a resort to the judgment of utility. After all, utility, conformity to environment, plays here its invariable and characteristic rôle of the selective principle that determines survival among the achievements of men. To paraphrase the proverb, "man proposes, but the environment disposes." The realization of this fact has driven us into a practical age, has submerged the academic in the utilitarian, which all perceive to have, in a sense, the final word. We are "pragmatic," even in our philosophy. We are above all "up to date," which means that we discard everything as soon as we suspect that it may not work quite as well as something else. Indeed, in our fear of being behind the times we frequently cast off the better for the worse, and in our rage for the practical we lose sight of those very conditions conformity to which constitutes the essence of practicality itself.

Practicality not adequately tested by patronage

Such a criticism may well be passed upon a school which fancies that through the elective system it renders itself in the highest sense of the term practical. For it assumes that the only and final test of practicality is demand for its wares on the part of the public. It governs its instruction as a merchant does his business, keeping sharply in mind what men want rather than what they ought to have. Indeed, it is assumed that what men desire and what they need are really one. However, even the business man has learned to force

trade, to create demand, to induce men to want what they did not dream of coveting before the agent or the advertisement or the fad or fashion of the hour convinced them of the dire distress of their present plight. If business is practical in causing men to want to buy what it has to sell, much more should education feel that it is part of its practical service, after it has done its best to discover what it is most nearly certain that men genuinely need, to attempt to infuse the young with an eager longing for these ultimately desirable things.

Election fails to secure either free or intelligent choice

The elective system in education is like the policy of *laissez faire* in government. We may add that, just as *laissez faire* fails because, when the government takes off its hands, other forces for social control quite as irresistible enter in to assume the abandoned functions and to manipulate them in the interests of individuals or of classes, so the elective system fails because without the interference of the school an impartial determination of the relative practical value of subjects is impossible. Paradoxically, to be under a "let alone" policy means not to be let alone, and the school, like the state, cannot avoid the responsibility of an impartial judgment concerning the deserts of competitors. The children before whom the materials of culture are spread have as yet neither taste nor judgment in reference to most of them. They are, therefore, really victims of a variety of influences that are not impartial but partizan. The influence of parents, thrown on the side of the studies with which they are familiar, or which possess prestige in their circles of society, the attitudes of fellow students, who are governed, in part at least, by youthful considerations, the popularity or advertising skill of instructors, — these are but a few of the many forces quite as effective in determining choice as is the fitness of the work for the individual making the election.

The delegation of the work of selection to the judgment of the event is both wasteful of energy and pernicious in outcome. It is wasteful, because the trial and error method is always wasteful as compared with that of intelligent learning. Even though the school cannot tell beforehand what studies should survive, it should hold itself to the task of acquiring such experience as will at the earliest available date make possible a definite rational decision. Any other course is not only blind and blundering in method, but imperfect in result. Trial and error learning does not of necessity get the best, but only that which works. The results of free election might give an education that would keep its patrons at the level of culture which is their standard, but it might at the same time fail by a great deal of giving them the best that they can get. Education is an agency for determining tastes and ideals, as well as for catering to those of the mass of its patrons.

The elective system wasteful in energy and pernicious in results

From time immemorial the school has striven to perform this function. Indeed, as an academic institution its solution of the problem of life has been that of conquering and molding the instincts, rather than that of showing how circumstances can be mastered. Ethically we have been taught humility and self-control, to live for ideals which, since they are dependent upon ourselves, certainly can be realized. We have been taught to govern our wants by what we can get, "to go to the mountain," instead of worrying about bringing the mountain to ourselves. However, in modern times the greater efficiency of human effort has created so enormous an interest in the practical that it has given rise to a sort of feeling that the ideal can take care of itself. The problem is now no longer to limit our wants to our meager powers, but rather to extend our powers so that we can gratify all our wants.

The school of the past as the apostle of higher educational values

The realization of this result is, of course, not only impracticable, but also undesirable. Since our wants contradict

The school should strive to determine both the practicable and the desirable in life

each other, and since the wants of one often conflict with those of others, we are faced with the problem of rationalizing our purposes. We must discover what adjustment of instincts and ideals is at once the most practicable and the most desirable standard for the guidance of conduct. This problem the school cannot shirk, since upon it falls the duty of determining social heredity, of divining and in a measure marking out the course of progress. It must undertake the task of excluding the useless and the undesirable from the curriculum, and it must, in consequence, develop a method of experimentation and a principle of selection by which progress through the survival of the best may be assured.

Summary

The endeavor to determine the work of the school by reference to its bearing on all the aims of life may be characterized as an appeal from academic values to those of utility. Education by this course loses its isolation and seeks to serve. It aims at efficiency, — that is, at that which in the struggle for existence must survive because it has abiding value. In setting up certain values as supreme to the exclusion of others, education became academic. However, the accumulation of a superabundance of material, every phase of which could justify from the academic point of view its place in the curriculum, created a problem of selection. This problem could be settled only by an appeal to the practical. The *laissez faire* method of securing this result is seen in the rise of the elective system. This method is faulty in that survival is not thereby determined according to satisfactory criteria. The standard of survival which it brings to bear is not merely the power of the form of culture to make men efficient in realizing admittedly valuable results, but also the attitude of youths toward values that are as yet in question. Hence a free elective system leaves its subjects to stand or fall largely by their appeal to unenlightened caprice in regard to what is really worth while.

The school is in duty bound to replace blind by intelligent selection, whether this concerns the most efficient methods of gaining certain desirable results, or the determination of results that shall be regarded as desirable. It is bound to take an attitude in regard to the ultimate end of education, because only thus can it gain a criterion by means of which it can determine the relative value of the phases of culture that are possible for it to give.

Section 57. *The ultimate end of education*

The question of the ultimate end of education is that of the ultimate aim of life. This fundamental problem of ethics we cannot expect even dogmatically to exploit. However, since the teacher must govern his work by some conviction on this matter, it would seem necessary for a theory of education to suggest the method by which educational aims can most satisfactorily be defined, and to indicate the leading constituents in the educational ideal.

Utility as resting back on ideal values

In our introductory chapter it was contended that the conception of utility is the only criterion by which the school is able to determine among competing lines of study those which should prevail. On the other hand, it was suggested that utility is itself an empty conception unless it gets content from those ideals of personal culture which it is the province of the useful to serve. We may take the ground that the curriculum must prepare for efficient living, yet it is evident that this does not relieve us from the necessity of discussing what sort of a life one who may justly be called efficient lives. Efficiency in life is an ideal quality. It is, perhaps, self-preservation; but self-preservation is with humanity dependent on conformity to conditions which human beings regard as standards of legitimate, appropriate, or ideal conduct. The appeal to practice

is essentially a falling back upon the general verdict of humanity in regard to relative values among various ideals of life.

In the last section the view that the school should leave to the community the task of determining the curriculum by simply giving or withholding its patronage from this or that course which the school offers was opposed. It was maintained that the school should endeavor to rationalize the various aims of life, that it should study these as they appear in action both historically and to-day, and that its appeal to practice should not be a blind reliance upon the popular verdict of the hour, but rather a rational determination of the experience of the ages. In this universal experience all the academic ideals will be seen to play their part, struggling for existence, determining and being determined. For, once accepted by mankind, an ideal of life becomes a condition of which all other ideals are compelled to take account. The practical of to-day is the net outcome of the progress of humanity in reference to the construction and determination of its ideal.

The established ideal as the condition to which progress must conform

It is important to note the agreement of this point of view with the general notions of evolution and development which have been adopted and defended in our earlier discussions. The formula that sums up these processes is that of variation and selection. The variation comes from within, the product of unknown forces; the selection is brought to bear from without, from the environment, from the conditions of life. The conditions of life do not explain life, nor any one of its functions. They merely constitute that to which life or any one of its functions must conform in order to remain. No variation that is not practical can survive.

Internal origin of the positive factors in evolution.

The positive element in development and evolution comes from within. The external is merely negative, selective. Selection does not account for life, for power of movement, for sensitivity, for cognition, nor for morality. Yet all

these may be said to have established the relative importance they hold in the scheme of evolution because they conformed to the forces that determine survival. The power of movement survives because it enables its possessor to avoid unfavorable and to seek favorable environments. Pleasure and pain prove their right to exist by enabling readjustment by the method of trial and error. Cognition is favored by selection because it makes possible ideational readjustment, through which we avoid the loss of life or of vital energy incidental to cruder forms of learning. Morality, too, finds its title to permanence in that it furthers that most helpful of agencies, coöperation.

The functions survive because of their utility

But while it is plain that utility constitutes the title of these functions to survival, it can scarcely be urged that it is the reason for their existence. For this would imply that we feel and think, hate and love, and admire the beautiful in order that we may live. Ethically it would seem that the truth is the exact opposite; that we live in order that we may enjoy and suffer and strive to make life more pleasant, more beautiful, more intelligent both for ourselves and for others. If life were the valuable thing, and all other functions were worth while merely as contributory to it, we ought to be willing to part with these other functions, provided we could live just as well without them. Yet who would be willing to vegetate as the plant does, if thereby he were assured a life as long as that of the *sequoia!* Not only would man regard life on such terms as a useless affair, but he ranges his functions on a scale of valuation according to which the latest to appear are, as a rule, rated as the most worthy of honor. Thus he would be unwilling to exchange the higher intellectual and moral life, even though it might involve much unhappiness, for the existence of a hog with every assurance that the wants of his brutish nature would be supplied.

The higher functions ethically more valuable than the uses they serve

From the point of view of mere utility, we are conscious in order to live. From the point of view of ethics, we live in order that we may be conscious. In the long run the standard of ethics determines the higher utility. The meaning of evolution is to be found in its products, not in its beginnings, in final rather than in efficient causes. Cognition and morality cannot, it is true, fail to conform to the conditions of life, for if they did so fail they would promptly disappear, together with the life that they have failed to protect. On the other hand, the preservation of life on terms that are hostile to the primacy among its interests of cognition and morality is repugnant to the better judgment of man. We can and do raise the question, "is life worth living," — a question which on the hypothesis that life itself is the supremely valuable thing becomes impossible and ridiculous.

We have already emphasized the fact that the higher functions bring with them new needs. When they have proved their right to survive by their utility, they incorporate, as it were, their own ideals into the conditions of successful living. To the intelligent being life is not enough, he must have insight as well. Our environments are not merely the physical conditions by which we are surrounded, but they are the entire past of the race, with all its progress and achievement. To serve the total established aim of humanity is the higher utility, and nothing short of this can be regarded as genuine efficiency. It follows that the essence of the practical is to serve the academic, — the accepted, the standardized academic, the academic which is the fusion of all genuine recognized ideals of human life, which has been winnowed by selection and found a permanent good. The higher utilities of life are subject to a process of reconstruction. Each new product of evolution must submit itself to the test of survival, which is the test of service. It must help to foster established aims.

The practical as service to the standardized academic

Constant reconstruction of this standard

But when it has once justified itself, it becomes part of the established order to which the new competitor for recognition must submit its fate.

Self-realization as the highest utility

We have spoken of mere utility as that which makes for the mere preservation of life. The higher utility means that which serves those interests that make life worth living. It adapts us to the standard of life which is a rationalized expression of the experience of the past. There may be said to be another, a highest utility, the essence of which consists in fostering the improvement of standards. To this highest utility the aim of life is not self-preservation or preservation according to existing standards, but rather self-realization. It looks upon human nature as a thing of exhaustless potentialities, and regards the exploitation of these unrevealed powers as the highest service to man.

Self-realization must be useful to be *real*

Defined as the service of self-realization, this highest utility may seem not like a practical, but rather like a purely ideal value. On the other hand, it is evident that the ideal values become actual, and so are genuinely realized, only by conforming to and serving life as it is. The highest utility does not consist in creating new values which are worth while for their own sake. Paradoxical as it may seem, that only is worth while which serves other ends outside itself. Nothing in isolation can justify its right to be. Academic seclusion does not save the ideal, but rather destroys it. The knowledge that does not help us to gain some other good thing, — wealth, health, beauty, morality, more knowledge, — is by that fact rendered of no value and not worth the keeping. Herein lies the necessity of an appeal to practice, to established values. Self-realization is an utility because that which the self creates out of its own resources must serve the general good before it is entitled to rank among the *realities* of life. Realization is putting into practice, bringing into conformity with things

as they are, and the service of self-realization is a genuine utility because it looks to a future that betters the present only after conforming to its conditions.

The aim of education found by rationalizing human practice

The method by which the aim of the school is to be discovered is, therefore, that of rationalizing human practice up to date, and thereby arriving at what may be called the standard valuation of life. No way exists for appraising the relative value of various activities except by determining their relation to the total aim of life as revealed in experience. And, it may be added, since experience is never finished, we can never say that all the things for which practice exists are definitely known. The history of evolution is a continuous revelation of new phases of that which seems indispensable to a perfectly satisfactory universe. Nevertheless, within reasonable limits it is perfectly feasible to approximate to a view as to what is worth while that conforms to the experience of the vast majority of mankind.

Constituents of the educational aim

The constituents of the aim of education include the lower utilities of mere self-preservation, — health, mastery of a vocation, ability to get on in society. The standard in reference to each of these varies. The health requirements of one age are not so exacting as they may be in the next, and the same is true of vocational skill or social adaptability. Education is bound to consult the existing standards and to strive to better them where this seems desirable in view of the other aims of life. The aim of the school includes the higher utilities, the ideal values of life, knowledge, beauty, and morality. These values are, as we have seen, grounded in instinct. Curiosity leads on to the ideal of the intellect, the parental and social instincts lead, when rationalized, toward the ideal of duty, and there are doubtless instinctive preferences of taste which are the foundation of intelligent æsthetic appreciation. Since the ideal is in each case the instinct rationalized, we may speak of it as the ideal of the reason.

The school should foster the ideals of the reason

It is part of the function of the school to serve and to foster the ideals of the reason. This academic task is its traditional duty, and there need be no fear that it will lag in an office so much to its liking. Nevertheless, since the present tendency is so markedly utilitarian, it is important that the school should realize clearly the place of these ideals of the reason in the higher utilities of life to-day. A society that talks persistently about utility without analyzing its meaning and constituent elements is apt to test results more by the lower utilities than the higher ones. Hence, to speak of the school as utilitarian means to many men to degrade it from its ancient dignity, and to make of it a mere instrument of a materialistic society.

Utility of service to the ideals of the reason

But the ideals of the reason have become so thoroughly incorporated into the demands of life that the school cannot be utilitarian save through continually cultivating them. From time immemorial they have constituted the test by which society has awarded its highest honors, if not its most lavish material rewards. Society recognizes in the ideals of reason its salvation against the anarchic effects of intelligence when this works in the service of self-interest, and against the emptiness of the life that makes the amassing of wealth its sole pursuit. A school that would serve merely the lower utilities would be regarded by society as failing in its service, as neglecting the things that are most useful. Indeed, in our civilization so ingrained is the demand for ideal values, that we tend to idealize the practical and to convert the very gospel of utility into an academic value, — that is, one worth while for its own sake. Hence we become wedded to a belief in the supreme excellence of the power to get results without reference to the value that these results may have for the other ends of life.

In idealizing the practical, however, society and the school are unquestionably opening an opportunity for all the values of life to assert themselves and to become to a greater degree

The practical world as the meeting place of ideal values. Consequent process of selection

than ever before effective in human practice. The world of activity, of achievement, is the meeting place of men and of ideas. In that world, all things are put to work, are made means to the accomplishment of ends. It is a good thing for the sense of the need of getting things done to be emphasized, even overemphasized. The world is ready for a practical age, in which the lumber of the schools shall be dragged out and either be put to work as material for a new construction of society and industry, or, if such uses cannot be found, be definitely set aside. The idealizing of the practical means the realizing of the ideal, and this realization means that vigorous selection of the products of human power without which a consistent, unified, forward movement in human affairs is impossible.

Practicability and desirability interdependent in the establishment of relative values

The problem of the school may be stated in slightly different phraseology as that of discovering for its pupils that which is desirable and practicable for them to study and to become. The practicable is that which agrees with the conditions of life. However, these conditions are largely of human creation, and can very extensively be changed by the evolution of new attitudes, new ideals, new desires among men. Hence, the problem of determining the practicable is very largely a problem that should take account of the possibility of modifying the conception of the desirable entertained by humanity. On the other hand, the desirable is subject to the test of practice. That which will not work must perforce cease to be desired. Practicability is continually asserting itself to destroy some ideals, to reduce the importance of others, and to enhance the valuation of a few that prove most fundamental and abiding. Among the desirable things the love of truth, of beauty, and of righteousness are most valuable because the knowledge, the art, and the conduct to which they lead are not only worth while for their own sake, but because they furnish, on the whole, the greatest aid to all the other desirable ends of life.

Tendency of teacher and pupil to forget the practical

So far as the school is concerned, it is evident that it has thought more of the desirable than it has of the practicable. This is very probably due quite as much to the tendency to follow the line of least resistance in pupils as it is to the academic self-absorption of the masters. It is easy to graft upon the instincts of the child the ideals of the reason. It is curious how singular a lack of the sense of the utility of knowledge pupils may possess. From actual tests I am led to believe that at least the majority of an average class of college students will reply to the question "What is the practical value of knowledge?" by saying in effect, "To get more knowledge." This answer may be in part the result of their training, but it seems also to indicate that their sense of utility interposes few obstacles to the domination of the academic ideal of knowledge.

Need of cultivating utilitarianism

It is probable that the motive of utility needs to be emphasized in the schools, not so much because it is necessary in order to get interest or effective work, but rather because without such emphasis the child fails to become sufficiently practical. What we need is less dependence on the ideals of the reason, particularly the intellectual ideal, and more upon the judgment of relative values. The age of independence in child development should find him not only inspired by academic ideals, but also sobered and made critical by a healthy utilitarianism. The school should be practical and teach the art of being practical. It should be on the alert to determine by every means in its power the usefulness of its work in promoting the total welfare of men. Such an attitude cannot fail to react upon its pupils, filling them with a critical spirit in regard to relative values.

It is in the upper departments of our educational system, in secondary and collegiate education, that the divorce between the academic and the practical is most in evidence and does most harm. College students in general are apt to fall into

Bad effect of overemphasis of the academic attitude on (1) the student who readily assumes it;

one of two classes. The first of these consists of those who become absorbed in one or several phases of the higher culture. They wish to devote their lives to this. In order to do so they usually take up the profession of teaching, in the hope that they may thus be able to live more and more exclusively with their beloved specialty. Such students, however, are frequently ill adapted to teaching. They are simply enamored of a phase of learning, and have paid no attention to the practical value of this in the culture of men, or to the correlative problem of teaching it. In these matters they are not interested; perhaps cannot become interested. Exclusive devotion to one kind of truth has blinded them to all other phases of life, in a word, to the utilities. Certain interests that are normal and necessary have been atrophied, while all the nutrition has fed the one passion, which, alas! all too frequently renders its possessor inefficient in the economic struggle for existence.

(2) the student who resists it

The second class of students are the avowed utilitarians. They are in college for the sake of the business value of what they learn, or rather, since this cannot always be clearly demonstrated by the professor or appreciated by the student, for the social or professional value of the degree. Such students are, according to our criterion, not less impractical than their idealistic brethren. For while they are not losing sight of the problem of making a living, they are oblivious to the higher utility of "making a life." Moreover, nothing can be more impractical than to do useless things just because it is the fashion.

The college that exalts the academic ideal at the expense of the ideal of efficiency harms both classes of students. The idealist may blame it for the ineptitude of many a life out of which a normal utilitarianism has been educated. The utilitarian may justly complain that, since no attempt was made to square the work he was called upon to do with a sense of

values which is after all healthy, he has been led into idleness, indifference, and shams.

Summary

We may conclude that the ultimate end of education is that of adjusting the young to the realities of life. Since these realities are with man largely established idealities, the utilitarianism of the school resolves itself to a considerable extent into a service of those aims which have constituted the academic motives of schoolmen. On the other hand, since no aim is permitted to remain in isolation, no knowledge, art, or moral practice will be suffered to survive in social heredity unless it proves its right to exist by its use, that is, by its service to other aims than itself. Thereby alone can its relative value be determined. The method of determining these relative values must be that of rationalizing human practice up to date. Perhaps, also, the school may be able to forecast new ideals of human nature, and by promoting their spread aid in the progress of humanity toward the realization of its potentialities for growth. At any rate, the educational institution is bound to lead the way in philosophic and scientific investigation, in the progressive interpretation of the moral law, and eventually in the advance in artistic taste.

The constituents of the educational ideal include such fundamental conditions of self-preservation as health, vocational efficiency, and conformity to the social order. These are factors of the simplest phase of utility. The educational aim concerns the service of the ideals of the reason, knowledge, artistic taste, virtue. These are the higher utilities, because in man's scale of valuation they are held as of greater worth. The highest utility is the service of self-realization, and in the control of this the school may be assigned a voice. But everywhere it must keep close to practice, to relative values, to the gospel of achievement. It must be on the alert to the verdict of practice upon its work. It must combine a wise conservatism with

willingness ruthlessly to cut loose any form of culture the service of which has fallen below that which its presence excludes from the curriculum. Especially should the school cultivate the spirit of critical valuation or of utilitarianism among its pupils, for only through this can they achieve the highest service both for themselves and for the society in which they live.

CHAPTER XVIII

LIBERAL AND VOCATIONAL EDUCATION

SECTION 58. *The evolution of liberal education*

HISTORICALLY, liberal education has generally meant, as the term indicates, education of free men, or aristocrats, — and so education for leadership and leisure. On the other hand, vocational education has meant that training which fits one for gaining a livelihood through economic service of some sort, — a species of culture and a career which have been traditionally despised by the upper classes. However, the term, "liberal education," has been used very loosely, and we can distinguish two other main significances that it has possessed. According to the first, liberal education is social and ethical culture, whether it be that of the leader or of the follower. Professor Laurie [1] defines the education with which he as an historian deals to be "the means which a nation, with more or less consciousness, takes for bringing up its citizens to maintain the tradition of national character, and for promoting the welfare of the race as an organized ethical community." Such a definition excludes the vocational, and we may take it as one large vague meaning that liberal education is frequently thought to have. The third meaning is that of *broad* as contrasted with *narrow* education. Here the word "liberal" is used in the common signification of "generous."

Various meanings of liberal education

All these meanings are interrelated, and they appear in phases of the evolution of that education which can to-day most ap-

[1] *History of Pre-Christian Education.*

propriately be called liberal. We shall offer an outline of that evolution, which will, however, consist in great measure of material that has already appeared in connection with earlier discussions. The special problems associated with the distinctions between liberal and vocational education are sufficiently important to warrant the assembling here of whatever concerns it, even at the risk of repetition.

Evolution of aristocratic culture for leadership

(1) The first phase in the evolution of liberal education is the development out of general ethical culture of a distinct type suited especially for training in leadership because of the power that it gives in social control. A class with this sort of a special culture appears as a result either of the differentiation from a democratic society of some who are gifted to control, and their endeavor to perpetuate their power in their children, or of the conquest of a race inferior in ethical qualities and training by one more fortunate in these respects. The position of control of the dominant class enables it to develop and to perfect a system of training in morals, manners, ideals, knowledge of human nature, military skill and intelligence, religious belief and ceremonial, statecraft, and the like, which serves to maintain the supremacy of their caste. Thus we have the education of the aristocrat differentiated from that baser culture which serves only the lower needs of life and is supposed to be tolerable only by those who are servile by nature.

Expansion of this into education for leisure

(2) Liberal education evolved from education for leadership into education for leisure. The governing class inevitably becomes to a great extent a leisure class. The arts of life which have so far been largely of utility in leadership are patronized because they contribute to amusement, to self-glorification, or to those nobler tastes and ideals which the life of reason constructs for itself. Not only does the aristocrat become a patron of education for leisure, but so also do the schoolmen, for whether philosophers, or priests, or artists, whether munifi-

cently patronized by the nobility or left in neglect, they are, to some extent at least, a leisure class. Their academic culture grows out of and remains closely associated with education for leisure, and both aristocrat and schoolmen look upon the noble enjoyment of leisure as equivalent to doing that which is worth while for its own sake.

Liberal education tends to become academic

(3) But while education for leadership grows into education for leisure with its academic interests, there develops later on a rift between them. The academic interest leads to ideas which, since they are not produced under the constraint of an interest in the established method of social control, often run counter to the desires of the ruling class. Hence, as we have seen, schoolmen are restricted to academic issues, and education for leadership remains in a deathlike conservatism. Under these circumstances the term *liberal education* may more appropriately be applied to the education of the school, in so far as this possesses genuine freedom and power of growth.

The higher thought and the reconstruction of methods of social control

(4) Nevertheless, the divorce between the education of the school and education for social control is not permanent. The views of life that are evolved by men of thought inevitably react upon the conduct of men of action, and the school which fosters thought, since after all it is in and of the world, must eventually make its ideas known and felt. This happens even though both thinkers and aristocrats combine to keep the disturbing ideas from becoming current, cynically condoning a social order which conscience pronounces unjust and reason unsound, as did the *Illuminati* in the days of Louis XIV. The fearless frankness of those who cannot conceal the truth because of self-interest combines with numberless subtle ways in which ideas are diffused, until at last the suspicions of the submerged mass are roused to join the forces making for the reconstruction of a social order that the better judgment of humanity has declared unsound.

Rise of a new democratic culture for leadership

When academic conceptions begin to play a part in the reconstruction of the methods of social control, the education of the school becomes again a part of the preparation for leadership. In the democratic political conditions that now appear, leadership is more and more felt to be a service which those of superior ability and education should render without regard to the rank in society from which they have sprung. Leadership becomes a vocation dependent in part upon the proper culture, rather than a status conferred by birth. It becomes service for pay, rather than exploitation by those who through conquest or the custom that sanctions hereditary right are enabled to exact what they want without reference to equivalent return service.

Thus liberal education begins and ends with a utility. It begins in preparation for leadership, not as a profession which can get pay for its service, but rather as the clever art of a class, by means of which it retains its supremacy. Later, liberal education evolves into education for leisure, academic, apart from the world and its utilities. Still later, it gains a new utility, as the preparation for leadership in a democratic society, where such activity is recognized as a vocation.

(5) The learning of the school does not confine itself to the criticism and the reconstruction of political life, but it also brings about the exaltation of the humble vocations. It takes command of the human situation, and whatever it touches rises in importance and dignity. As a result of the body of learning that their practice in its higher phases comes to involve, medicine, teaching in all grades of the school, engineering, trade, industry, art, and literature become professions.

Liberal education as preparation for leadership in any vocation

The professional man may be defined as the leader in a vocation, one whose preparation has involved so much material as to make him capable of understanding and taking part in the highest types of work which his vocation undertakes.

To do this he must have a mastery of the scientific foundation of his special work. He must have a liberal preparation for it. Liberal education thus becomes education for leadership, not merely in political life, but in any other activity. As politics becomes a profession, so all other vocations gain a professional phase. To reach the professional phase of any vocation a liberal education is necessary. The leaders of society come to include all who are preëminent in any profession that has been vitalized by the higher thought. The political leader could in the past without ridicule arrogate to himself the position of leader and dictator in whatsoever phase of thought or action he chose. To-day, when leadership is seen to depend on professional preparation, such an attitude is regarded as the harmless folly of those to whom the idea of "the divine right of kings" is not yet obsolete.

Liberal education as training for readjustment in all phases of life

(6) Liberal education, as education for leadership in the various vocations, is *much* or *broad* education. It gives that knowledge of fundamental principles which enables a treatment of the new situations with which it is the peculiar task of the leader to cope. It is education for readjustment, rational education. But the demand for readjustment in modern life is broader than the vocation. To lead in any vocation one must have such knowledge as enables him to make of his own specialty not only an indispensable servant to society, but also an independent force therein. In preparing for this general leadership in social life, liberal education must give a training in the fundamental principles of social coöperation, the principles that underlie the life in which the vocation plays only a part. It must include not only training for leadership, but also a rationalized form of that social and ethical culture out of which training in leadership originally sprang.

Summary

The steps in the evolution of liberal education are, then, the

differentiation of culture for political leadership from the general social and ethical culture of the community; the development from this of education for leisure; the separation of academic culture from that for social control, with a coincident advance of the former and conservation of the latter; the reconstruction of social and political life through the application to it of the conceptions developed by the schoolmen, with a resulting profession of political leadership, requiring as a preparation liberal education; the reconstruction of all the vocations through the application thereto of science, and the consequent development of leadership in any vocation into a profession, to prepare for which a liberal culture is necessary. Lastly, since leadership means mastery and power to readjust, liberal education must include training in such power, — rational culture, broader than the vocation, and involving training in social coöperation. Thus liberal culture has come to embody all its meanings: social and ethical education, education for leadership, education for leisure, broad education. These conceptions are united in education for leadership, which, since it is preparation for a profession, has come to have a vocational as well as an aristocratic character.

Section 59. *The rise of vocational training*

Aristocratic leadership not regarded as a vocation

The ordinary notion of a vocation is that of a specialized occupation by which one may be able to get a living. When we apply this conception both to historic and to present conditions, it needs some amendment. The business of social control has been from time immemorial the most richly rewarded occupation. Yet men have not commonly held it to be a vocation, because its rewards came not as definite payment for a recognized service, but as the spoils of a system of exploitation. The growth of leadership into a vocation has come about

by the exaltation of the ideal of service, and by the rise of a democratic society in which it is coming to be felt that the only legitimate source of income is a service to which is attached a definite hire.

The profession distinguished from the vocation by its cultural basis

Again, the business of social control early developed an elaborate cultural basis associated not only with its utility, but also with the leisure, the academic interests of life. The existence of such a basis has caused this occupation to be differentiated from other vocations. On the other hand, wherever an occupation acquired a somewhat similar foundation in learning or science, it rose in rank and became distinct from the ordinary service for pay. It became a profession the peculiar quality of which is found in the fact that the culture and the ability that it requires of those who practice it allies it with distinction, aristocracy, leadership. Thus, while, on the one hand, social control becomes a profession by acquiring the character of service that hitherto belonged to the ordinary vocations, so other vocations became professions through the acquisition of a cultural basis such as was at first possessed exclusively by the art of social control.

The learned professions as involving both social control and service

The so-called learned professions, law, ministry, teaching, and even medicine, are offshoots of the art of social control. They illustrate the earlier fields in which this art gets definitely into the form of a vocation. In these professions an opportunity was offered for any gifted man to attain a position midway, as it were, between the aristocracy who control and the people who serve. On the one hand, the lawyer, the priest, and the teacher became experts in phases of that culture which had been in the past so important an asset for a governing class. They were learned in some form of the art of social control. On the other hand, they served for pay, and in that were differentiated from the genuine aristocracy. However, they prepared the way for the conception that social control should in all its phases

be a definite service for a stipulated reward; that is, a genuine profession.

The professions as creative of the first vocational schools

The rise of the profession meant the advent of an elaborate form of vocational training by the school. But the growth of democracy and the reconstruction of industrial life by applied science have made it necessary that the school should undertake the preparation for vocations not intellectual enough to warrant their being called professions. More and more the system of apprenticeship, originally adequate to prepare for such callings, has broken down, and the vocational school, which, as distinguished from the professional school, prepares for occupations requiring a smaller amount of training, has come to be a recognized part of our educational system.

The decline of apprenticeship and its reasons

The system of apprenticeship has failed for two reasons. First, the organization of modern industry has left the mature workers in any field little opportunity or incentive to train apprentices. They tend to work in organized groups, rather than singly, and where such is the case each, instead of conducting on his own account a business with many phases, works at a special task which is only part of a total business, the control of which lies in the hands of some captain of industry. Such a worker has nothing to give an apprentice to do, and no motive, except that of kindly interest, for offering him instruction. Hence, the apprentice is crowded out, and the employer, in order to get properly prepared recruits for his service, has in some cases set up vocational schools. Second, the application of science to the arts of life has made the preparation for any vocation require a certain amount of such education in science as has never been given by apprenticeship, nor by any other agency than a school. Moreover, the specialized nature of the work of men in the vocations renders apprenticeship to them too narrow as experience to give an adequate preparation for anything except a very specific task. Such a limitation

is highly undesirable, since it makes for a lack of flexibility, a dependence, which it is the purpose of modern democratic education to avoid.

Vocational education due to the reconstruction of the vocations and increased respect for service

The rise of vocational education has, therefore, been due first, to the reconstruction of the lower vocations and the creation of the professions by the utilization of the materials of learning and of science, and second, to the coincident gain in human respect for service for pay. Both these advances are due to the development of the higher learning, including ethics, philosophy and science, and it might be proper to point out the main steps in the process by which this culture advanced to a position in which it was enabled to effect such ethical and industrial changes.

The first professions concerned in the control of wills

The art of social control from which the higher culture sprang was essentially an art of controlling wills. This art was so all-absorbing an one in early culture that not only the government of men, but also the dealing with nature took the form of methods of influencing volition. Medicine consisted largely of the exorcism of evil spirits, religion of the propitiation of the supernatural powers, and science of the study of the edicts of the stars or the whims of nature deities. Among the leading minds the custom obtained of gaining their ends by commands, bribes, threats, punishment, suggestion, cajolery, or persuasion, and when they came to deal with natural forces, they fell back on these familiar devices, instead of hunting for those uniform antecedents, or causes, the production of which will by mechanical rather than teleological compulsion bring about the desired result.

Traditional methods of their control

In connection with this art of controlling wills there grew up a body of tradition that was eventually committed to writing. The preservation of written records is, of course, the main instrumentality by which haphazard observations are compared and generalized, the generalizations to be again tested

and verified. As a result of ages of such comparison, the necessity of a scientific method is forced upon the human mind. This attitude comes with a prelude of skepticism, which springs from the recognition of the failure of the methods that tradition has so devotedly preserved.

Evolution of scientific control of men and nature

The evolution of a rationalized practice in regard to the control of nature and men involved three stages. (1) The earlier, cruder methods of controlling wills by cunning or force were replaced by the more refined and ethical practice of persuasion. (2) The phases of practice that involve a genuine appeal to volition were separated from those that involve merely a mastery of natural law. (3) The natural laws that govern volition, as well as the ethical principles that should control it, were studied, and social control was given a basis in natural science as well as in ethics.

(1) The age of teleological control. Rise of control by persuasion and so by justice

(1) As society grows older its institutions tend toward a certain rationality. A government that continually resorts to coercion and subterfuge is only a short remove from anarchy. Stability means uniform law, and law that works fairly well in practice. Law that conforms to these requirements will not only be accepted, but will seem, to the majority at least, as reasonable. The rule of privileged classes in early civilization is regarded as not only inevitable, because of their power, but as best for society, because only thus do the lower orders get justice, protection from enemies, and, in general, that stable social condition without which the practice of their crafts is fruitless. Thus the successful practice of social control comes to mean such law as will seem to men reasonable and will persuade rather than coerce them into compliance. When once mankind has come to expect ethical government, all proposals for change must, if they prove effective, be made to agree with the general sense of right. In the conflict of interests that history is bound to involve, there is a constant appeal

by the rival parties to this underlying justice. Government comes to be more and more, not the art of forcing or tricking men to do what one wants, but rather that of discovering that wisest, fairest course to which they cannot fail to give their assent if they think. The science of social control drifts away from the art of domineering, and becomes the study of justice. A somewhat similar result springs from the accumulation of data concerning the therapeutics of incantations, the prayers for personal prosperity and the confounding of one's enemies, the art of divination, etc. The exposure of the futility of these practices leads to the view that the gods are not to be influenced by the ordinary appeals which are efficacious with men, but rather that they follow their own inscrutable devices. The reverence in which they are held causes their will inevitably to be regarded as the highest justice, — a justice that would be plainly apparent, if only one could fathom their purposes. "Though He slay me, yet will I trust in Him." The endeavor to control the will of the supernatural powers resolves itself into an endeavor to comprehend Divine Justice, and here again we have the study of ethics.

The practic of life as grounded on a knowledge of final causes

Thus the earlier tradition in regard to the devices for controlling wills drifts into a study of the teleology of life. The idea of the Good is, as in the system of Plato, held to explain all things, and to be the secret of all power. The statesman sets before mankind the ideals for which government should strive, and if humanity does not obey, is not influenced thereby, so much the worse for humanity. The physician becomes possessed of a theory of cure, partly founded on empirical knowledge, but more largely a theory of what health is and how, in consequence, it should ideally be promoted. The teacher also feels that his duty is done when the truth is presented, and only to inherent evil can be ascribed the failure of the child to respond. The child who does not learn is held to deserve pun-

ishment, as one whose defect is moral, not as one whose case is to be mastered and controlled through the principles of genetic psychology. Philosophy concerns itself with final causes, and science endeavors to conceive the perfect, in the confident assurance that from this it will be able to deduce all the facts of experience.

The teleological age and the enhancement of the dignity of service

The teleological age in the evolution of science is responsible for one important gain in reference to the rise of the vocation. It prepared the way for the elevation of the ideal of service. A government that aims at justice cannot fail to regard its right to exist as dependent upon its service to its people. Christianity found ethical satisfaction in a Leader who was regarded as essentially a Servant. The ideal of humility in doing the will of God led to the conception that the highest quality even of an aristocracy was that of helping some righteous cause. Hence chivalry idealized the motto "I serve." To be sure, it was only in modern times that the taking of pay for service came to be regarded as other than debasing. It was necessary that progress in ethics should reach the point of creating democracy before this result could be attained. For there was need, not only that service should be exalted, but also that exploitation be brought into question, and that the ground should thus be cut beneath the feet of any source of income except the pay for service, before men were reconciled to the view that the laborer is not in a measure disgraced by receiving the reward of which he is worthy. It is not meant that exploitation has by any means been put to rout, as a phase of economic life. Yet it is certain that it has not only lost its ancient honor, but has come under suspicion, while service for pay has gained recognition as a transaction the details of which are so open to inspection that any injustice is likely to get the criticism it deserves.

(2) The teleological age, so far as natural science was con-

cerned, received its death blow in the period of which Bacon is the philosophic representative. It was seen that the contemplation of final causes does not reveal any explanation of the phenomena of nature upon which prediction can be based. Indeed, Socrates had made this discovery, and had taken it to mean that philosophy is of little practical utility except in the field of ethics. However, the Renaissance advanced beyond the Ancients in recognizing the tremendous value of scientific method in observation, generalization, and verification. Thus natural science began to gain results, and infused with new confidence, it proceeded to claim the entire realm of the physical. Teleology was replaced by mechanical causation. Ultimately, the application of scientific law to practice began to yield extraordinary gains, and the world became thoroughly imbued with the spirit of looking to science rather than to ethics to find the secret by which men may gain the mastery of things. The effect of applied science in differentiating into a profession the upper phases of those vocations which deal with the physical world and especially with mechanical agencies has already been indicated, as has also the corresponding reorganization of industry and the resulting need of vocational schools for even the lower grades of workers.

(2) Nature mastered by a study of natural law

(3) The study of natural causation does not cease with the confines of the physical world. Psychology comes to be treated as a natural science, and sociology and even ethics have their facts and their natural laws, which all who would influence man must respect. The inroads of the spirit of natural science into these realms, that to Socrates were the exclusive domain of teleology, has resulted in a reconstruction of the professions that concern themselves extensively with social control. Teaching comes to mean, not merely to know one's subject, but also how to present it successfully. The ministry becomes a service of scientific philanthropy, as well as an exhortation to

(3) Social control seen to be a matter of natural law

remember and prepare for the hereafter. Even law becomes touched by the dawning apprehension that its justice and its penalties must take account of the facts of human nature. The legislator and the judge realize that some laws cannot and others will not be obeyed, that punishment should protect society and aim to reform the culprit, as well as to uphold the majesty of justice.

All professions become scientific

In all this there is much of ethics, but there is also a considerable infusion of the spirit of natural science. The learned professions are coming to require as a preparation more than learning in traditions and an apprenticeship in promulgating the ideas and the practices which they represent. It is necessary to know human nature and society in a fairly scientific way in order to rationalize with an approach to adequacy the practice of these callings.

Review of the rise o vocational schools

If one were to review the actual history of vocational instruction, he would begin with the learned professions, theology, law, teaching, and medicine. We have here the four faculties of the medieval university, since the faculty of philosophy may be said to have had in view the profession of teaching, as well as the purely academic aim of instructing in philosophy and the like. Then follows the establishment of schools for the military and naval professions, and for engineering in its various forms. Then schools for agriculture, commerce, and industry appear. Lastly, we are in recent years turning various political and social services associated with government into professions. Thus philanthropy and the diplomatic service are coming to have special schools. Doubtless, shortly, journalism will be similarly provided for. Eventually, there is reason to believe that nearly all of the political offices will come to demand a professional preparation. The beginnings of this movement are to be seen in the growth of a professional civil service. There is no reason why the functions of govern-

ment cannot be more efficiently performed by men trained to this profession and enjoying a fairly permanent tenure, than by men elected at haphazard to hold for only a short time, provided the possibility of the abuse of power on their part is checked by proper inspection and publicity in regard to their efficiency.

Summary

In résumé, it may be noted that vocational training as given in the school springs from the rise of vocations that demand school training. Such vocations arose from two sources. First, the art of social control grew into a number of vocations through the breaking off of the learned professions and the gradual differentiation of other phases of government into callings pursued for pay. This process was favored by the rise of democracy and the exaltation of the ideal of service. Second, the vocations that in earlier civilization were held as servile have with the application to them of scientific foundations become transformed so that one can no longer prepare for them by apprenticeship, but school training has become necessary. Moreover, those higher departments of such work for which an elaborate scientific foundation is required have come to be regarded as professions on a par with the callings that are concerned with social control, if, indeed, they do not involve a measure of the ability to manage men. The condition of these changes has been the development of that learning which was originally associated with the art of controlling wills. It first grew into ethics and teleological science. In this form it aided in the democratic reconstruction of the ideals of government and of service. Then there appeared a separation between the province of teleological and that of natural science. Finally, natural science became applied to industry, and also to those psychological and social phenomena that are concerned in social control. Thus it became the natural foundation for all professions, both those which arose from the earlier servile vocations and those which sprang from the art of social control.

Section 60. *The function of education in a democracy*

Definition of democracy

The form of government toward which the advanced nations of the world seem drifting is that of democracy. The celebrated definition of Lincoln, that democracy is "government of the people, by the people, and for the people," is, perhaps, the most successful characterization of this form of political control. The essential element in Lincoln's conception is that it regards government as a service which aims at promoting the welfare of each as much as is possible consistently with the welfare of all. Both from the practical and the ethical points of view, this service means — after once the requirements of public order have been met — the opening up of opportunities for individual improvement, whether material, mental, or moral, and the equalization of these opportunities so as to secure a just distribution of the advantages of social life.

Education the leading dispenser of opportunities

According to this conception of democracy, the part of education therein becomes of fundamental importance. For the opportunities that man in civilized conditions can get are largely due to the structure, pursuits, and interests of society, and these in turn are transmitted by social heredity or education. To be able to appreciate and to take advantage of the opportunities that society affords, one must have received the corresponding education. The government that endeavors to create or to distribute the opportunities that express themselves as social situations must make education a fundamental concern.

The *laissez-faire* ideal opposed to national education

Although the consideration just recounted is the fundamental reason why democracies must educate, historically other reasons were the first to be urged. Popular government in modern times came under the inspiration of a longing for liberty, for release from the exactions and tyrannies of the absolutistic forms of control then prevailing. In consequence, it early

attached itself to the policy of *laissez faire*, according to which no justification could be found for the promotion of education by the state. It was the necessity, rather than the theory, of democracy that led to the beginnings of popular systems of education. In the United States, Washington, Jefferson, and, above all, Horace Mann, the greatest influence in the revival and development of the common school in the nineteenth century, urged that a government by the people was impossible without popular education. Democracy, according to these men, could not survive unless it attended to the preparation of its citizens for the work of self-government. Horace Mann points out that the blind propensities of human nature are such that without restraint they lead to anarchy and overwhelm all. Democracy loosens the restraint of fear and of arbitrary authority. It must supply the restraint of intelligence, or perish by the forces that it has itself released.

State education as essential to self-government

"My proposition therefore is simply this: — If republican institutions do wake up unexampled energies in the whole mass of a people, and give them implements of unexampled power in order to work out their will, then these same institutions ought also to confer upon that people unexampled wisdom and rectitude. If these institutions give greater scope and impulse to the lower order of faculties belonging to the human mind, then they must also give more authoritative control and more skillful guidance to the higher ones. If they multiply temptations, they must also fortify against them. If they quicken the activity and enlarge the sphere of the appetites and passions, they must, at least in an equal ratio, establish the authority and extend the jurisdiction of reason and conscience. In a word, we must not add to the impulsive, without also adding to the regulative forces." [1]

The only regulative force adequate to this task is, in the opinion of Horace Mann, education. Here, then, we find a justi-

[1] *Necessity of Education in a Republican Government.*

fication for the abandonment of the policy of *laissez faire*. The government must strive to preserve itself, and the only efficient way of doing so is to provide for education, and, indeed, to make it compulsory.

Higher education as a cure for political corruption

A similar argument has in modern times frequently been advanced to defend higher education. It has been supposed that the salvation of the nation might be found in the ideals of those who are graduated from her secondary schools and colleges. In them it is hoped that we may obtain political leaders whose notion of service is not "graft," but rather the welfare of the body politic. President Butler,[1] for example, finds in education a means by which public service may be rescued from the grip of the spoilsman, and given over to the efficient.

Contention that education favors crime

It will be noticed that both these views attribute to education the function of moral culture. Indeed, it is evident that the moral phase of education is emphasized more than the intellectual one. There are, however, those who would maintain that the education of the modern school, instead of promoting the moral life, has in fact tended to destroy it. For example, in the last decade of the nineteenth century a number of prominent review writers brought out the idea that the statistics of crime show an increase in those countries in which popular systems of education had recently been built up. Such a result, they maintained, might have been expected, for education rouses the discontent of the needy and sharpens the wits of the knave, thus provoking crime and equipping with means for its more successful prosecution.[2]

Error of this notion

The statistics by which these notions were supported have been shown to have been misinterpreted, where they were not

[1] *Democracy and Education.*

[2] This controversy is summarized in Report of Commissioner of Education of the United States, 1898–1899, Ch. XXVIII.

positively erroneous. The apparent increase in crime was in most cases due to more accurate and complete records of the arrests made, or to the greater efficiency of the officers of the law in apprehending criminals, or to legislative enactments by which acts hitherto not crimes were made such. On the whole, it seems likely that increase in education means a decrease in crime.

Need of more attention to moral education

Nevertheless, it is evident that our system of education, in avoiding the religious, has also neglected the moral for the sake of the intellectual. Against this deficiency the last decade has seen a vigorous revolt. That the cultivation of the ethical ideals and the practice of devotion to the public service should be a fundamental aim of the school, there can be no doubt, and we shall probably see in a few years a reconstruction of the program of instruction in order to accomplish more efficiently this function. Meanwhile, it should be noted that intellectual culture may have a profound reaction upon public affairs, leading to a purification from control by blind passion or by unscrupulous greed.

Intellectual culture as making for the morality of prudence

The nature of this reaction is found in the regulating effects of a cultivation both of shrewdness and of prudence. A nation of intelligent men will not permit the spoilsman to govern, because it is evidently not in the interest of the body of voters that such a condition should prevail. The pursuit of private ends ultimately brings many, if not most, men across the trail of the politician, and if this personage be not more clever than his constituents, his perquisites will eventually be plucked away by those upon whom they have surreptitiously been levied. Thus shrewd self-interest in each is the parent of a fair amount of enforced rectitude in all. Honesty is made to be the best policy, and a prudential morality helps to promote the public good.

One cannot for a moment contend that such a régime of

shrewdness and prudence is a satisfactory substitute for genuine moral interest in the welfare of the community. Nevertheless, it is undoubtedly indispensable to a democratic state, not only that the people should be morally well disposed, but also that they should be keenly alive to the effects of public acts or negligences and to the efficiency of public servants. That our national education can be improved as an agency for moral culture does not mean that its intellectual training has not been and will not continue to be of fundamental importance in fostering public as well as private welfare. This mental training, without which moral culture would be inadequate to suppress either the propensities of the citizen or the cupidity of the professional politician, contributes also to another aim of democracy, the equalizing of opportunities. This third purpose is, as has been contended, even more fundamental than the others.

Democracy a struggle against the natural drift toward aristocracy

The laws of nature, particularly of human nature, make this task especially difficult. The efficiency of some as contrasted with others is bound continually to be capitalized in such forms as to increase their original advantage. "To him that hath shall be given." Nature tends toward differentiation, aristocracy. Nature creates the aristocracy of the organic world, with man as the lord of all. The moral sense of man has, however, created society at the expense of the greatest of differentiating agencies, the principle of natural selection. If nature makes aristocracy, man makes democracy. Society, religion, Christianity, — all these are but stages toward that goal of the moral sense, the brotherhood of man, the exact nature of which is, doubtless, as yet very imperfectly comprehended. But democracy continually encounters the natural drift toward differentiation and aristocracy. Prestige, property, and family solidarity give advantages to some which they do not, from the ethical point of view, deserve. These

advantages are a sort of "unearned increment." Prestige makes the commonplaces of certain men seem more wise than the profound insights of others. The rich can easily make an amount of money utterly beyond the power of poor men of similar talent. The handicap of a better family gives its possessor an advantage that cannot be overcome by the humbly born, except he possesses extraordinary ability.

Democracy continually wars against this "unearned increment." But it is quite as continually compelled to question the possibility, even the desirability of success in this struggle. It cannot destroy prestige. Perhaps it ought not to do so, for prestige helps men to single out those from whom they may expect good results. It should not destroy property, because property is not only a just reward for deserts, but also an invaluable incentive to endeavor. Least of all, should democracy interfere, after the fashion recommended by Plato, with that family inheritance of culture which stimulates so large a measure of the self-sacrifice among men. On the other hand, we are constantly robbing prestige of that permanent value which causes it to tyrannize over human judgment. More and more does society compel the later work of its heroes to submit to the same tests as have their earlier successes. Prestige continues to secure attention, but it is no longer so certain as of yore to compel acceptance. Again, as far as economic conditions are concerned, the United States early abandoned the practice of *laissez faire*, and entered upon a policy of endeavoring to create new opportunities. New territory was acquired to offer a foothold to those who had not acquired property within the existing limits of the country. Internal improvements, the subsidizing of railroads, the protective tariff, the post office and the like are examples of the methods by which the nation has endeavored to develop new conditions in which the handicap of those who have established

Democracy a warfare on the "unearned increment" of prestige, property, and culture

a grip upon the prevailing opportunities shall not work so conclusively to the disadvantage of such as from chance or inefficiency, either in themselves or in their parents, have been left among the unprosperous.

Necessity of preserving the family inheritance of culture

Democracy has even done something to interfere with the handicaps that spring from family solidarity. The agitation for laws that shall limit the amount of wealth that can be handed on from an individual to his heirs, and the actual enactment of considerable legislation in that direction indicate the ideals and the temper of the time. Such methods are difficult to employ, because they are negative. They do not create opportunities, but take away advantages. They could not be employed in reference to the inheritance of culture, for it would be impossible either in fact or in ethics to limit the zeal of the parent in furthering the welfare of the child through education. On the other hand, the positive method of creating opportunities seems here peculiarly appropriate. The state can offer through the school an education the excellence of which will go far toward swamping out the advantages in training that spring from fortunate parentage. Indeed, here in education democracy finds its principal agency for equalizing the opportunities of the young.

Reasons why education is the best agency for equalizing opportunities

Several reasons conspire to cause education to outrank in value all other agencies for creating and equalizing opportunities. First of all, public education does not take away from some, — except in taxes for its support, — to give to others, but gives freely and equally to all. Second, it gives only to those who are capable and willing to make the effort to obtain it, thus satisfying the ethical sense of the scientific philanthropist, who fears the pauperizing effect of gifts. Third, it gives to the young, destroying in a measure the inequalities of the parentage for which they are not responsible. Fourth, education, unlike governmental efforts to open up material

resources to the exploitation of the enterprising, does not give something easily to be monopolized by clever, scheming men, thus proving a source of private gain rather than of public benefit. Indeed, too frequently new material resources, instead of turning out to be the opportunity of the needy, have been seized upon by those whose business resources gave them a handicap. Thus they so far failed to equalize opportunities that they actually exaggerated the advantage of those whose fortunes were already in the ascendant. Fifth, education increases the efficiency of the service of the individual, and this factor is in economic history continually coming to have a greater relative value than wealth. The individual who possesses little or no capital, but whose services are valuable, is thus as time goes on more likely to be in a better economic position than one with considerable wealth but little individual efficiency. With the increase in productive power brought about by modern economic progress, wealth can be produced far more quickly and easily. The effort even of unskilled labor thus grows more valuable as compared with the value of the product. But if this be true of untrained and inferior service, how much more true is it of that which is trained and superior! Education, in increasing the value of service, is thus determining the factor which will more and more dominate the economic relations of men. The leaders in business, as in every other department of life, are coming to be those whose service is most effective, rather than those whose wealth is greatest. Thus the test of efficiency in the vocation, instead of that of ancestry or material resources or any other form of status which does not involve individual service, becomes the basis for determining who shall direct human affairs and be held in corresponding honor.

Here we may recur to the conception, advanced in the early part of the present section, that, since the opportunities of

to-day are largely dependent on social heredity, so the efficiencies upon which the utilization of these opportunities depend are in like degree furthered by education. Hence, if we would create and equalize opportunities, we must create and equalize educational advantages. Herein lies unquestionably the fundamental function of education in a democracy. The public school is not only necessary to insure a government *of the people*, by fostering the control of those dangerous human propensities to which popular government gives so free a rein, and *by the people*, by routing the demagogue and the spoilsman, but it is also an indispensable agency to bring about that just distribution of the means of human welfare which constitutes the meaning of government *for the people*.

Education as a means of fostering the democratic temper

There is still a fourth function of education in a democracy which deserves mention. It is the most valuable of agencies for preserving the democratic temper. As democracy means leadership through individual service, and not because of wealth, hereditary rank, or accident of fortune, so it must continually war against the natural tendency for power and privilege to drift to castes. To keep up this warfare the spirit of hostility to special privileges must be kept alive. Democratic government should not foster class hatred, because it should foster no classes to hate and be hated. Like any form of government, it needs leaders, but, if these are selected for service rather than because of status, they do not constitute a caste. A caste is composed of men who cannot because of their own acts rise above or fall below their station in life. Such leadership and such servility democracy rightly abhors, and a hatred of them is not a hatred of classes, but a hostility to the tendency to form them, which is as essential to the preservation of democracy as is breath to life. This hostility education breeds. It teaches men the nature and functions of society, and, therefore, puts them in a position to criticize

abuses. It enables them to get a fairly correct estimate of the capacities of those who lead, and a proper judgment of the work in life that they themselves are best fitted to do. It creates a self-respect that makes men as unwilling to be governed by shams or by pretense as by the naked tyranny of force. Like many other good things the discontent created by education may be a great evil. When it is the discontent of envy, of half-awakened ignorance, it is, indeed, to be feared by any form of government. But the remedy for the evils of education is more education, and an efficient system of schools ought to insure a democracy against any serious discontent except that which provokes the individual to do his best, and to resent any tendencies which interfere with the freedom of opportunity for each to perform for society the service for which he is best fitted and to gain just recognition and reward.

Summary

To education we may, then, ascribe four main uses for democratic government. It teaches people to govern themselves, it tends to destroy corruption and inefficiency in public service, it makes for equality of opportunity, and it creates the spirit that is discontented with any condition where such justice does not prevail. The two first functions are distinctly moral in character, and they imply that democratic education should not neglect, but rather emphasize, the moral element in the curriculum. However, even intellectual education can scarcely fail to cultivate a prudential morality that must make for just and efficient government. The function of equalizing opportunities is the most important of the uses of education in a democracy. Without such equality the "unearned increments," that prestige, property, and family solidarity inevitably involve, will result in the differentiation of society into castes. Education, by equalizing the opportunities for culture, affects that capacity for service which is coming to be the most important basis for differentiating men. It is at once the

simplest, the fairest, and the most effective instrument for preserving that equality without which democracy is impossible.

Section 61. *The ideal of education in a democracy*

If, then, education is not only indispensable to the preservation of democracy, but is also the principal agency of such a government in rendering its characteristic service to its people, what are the requisite elements in the training that it should provide? We may say at once, in view of our earlier discussions, that no education provides equal opportunities that does not train efficiently for whatever vocation the individual is by nature fitted to enter, provided society has a use for such a vocation. As the ideal of democracy implies that each one should render a service to the community which entitles him to a specific rating and reward, so the ideal education in such a government is one that aims to open up all vocations to a free competition where talent, industry, and character are the determining selective forces.

Democratic education should lead into a vocation

We have sketched such a scheme of education in discussing the function of the school. According to the position there taken, all children should pass through the stages, not only of elementary, but also of secondary and higher education. In the secondary school the pupil should "find himself"; that is, discover his vocation. In the higher school he should prepare for his calling. By a continuous process of differentiating selection pupils should be drafted out of the ranks of the secondary school to enter vocational schools that prepare for occupations which require little more than manual skill, to enter schools preparing for intermediate positions in the various walks of life, or to take that professional training which will adapt its graduates to positions of leadership.

Education in a democracy should provide all these oppor-

tunities so freely that no child shall be shut out from his proper calling because of poverty or the incompetence of his parents. It should not only provide these opportunities, but also, as we have seen, insist that, up to the age when a satisfactory test of the child's aptitudes may be supposed to have been made, they should have been utilized as effectively as compulsory attendance can make possible. The higher professional training will depend upon the energy and the ability of the student, but it should be as freely offered as a just apportionment of available public funds permits. A system that charges high tuitions for professional training, on the ground that the student is here getting some pecuniary advantages for which he should pay, inevitably tends to shut out certain individuals from equality of educational opportunity. The child of poverty may by extraordinary efforts put himself on a footing that his more fortunate competitor enjoys as a gift, but the handicap is neither democratic nor just. That hard labor and sacrifices bring their reward of character is true, but this should not blind us to the fact that poverty and the lack of parental insight or responsibility may often render, not only the best education, but even any higher education impossible.

Vocational education of all sorts should be within the reach of all

Assuming, then, that democratic education should provide, so far as possible, equal opportunity for all in respect to vocational training, what are its obligations in the matter of liberal training? According to the account that has been given of the evolution of liberal education, we may proceed to analyze it into three parts, each of which should, doubtless, be represented in a truly democratic training. These are (1) education for flexibility; (2) education for social coöperation; and (3) education for leisure.

Phases of liberal culture necessary to a democratic education

(1) By education for flexibility is meant such training as makes for ready readjustment. It is the education of the reason. Such culture is important in modern society, because of

(1) Desirability of universal education for adaptability

the rapid changes in the modes of living and of gaining a livelihood that spring from a conscious endeavor at betterment. It is especially important in a democracy, in order to insure as large a distribution as possible, not only of the power to initiate new conditions, but above all, of the ability to take advantage of them or, at least, become adapted to them. The mass of the mechanical workers are usually opposed to new methods, both because these methods save labor, thus, for a time at least, throwing some out of work, and because they involve readjustments to new tasks and the acquisition of new types of skill, — processes that to the lower order of intellect and culture are difficult, if not impossible. Such opposition could be removed if education could give to the people who are likely to display it flexibility. There is much evidence that men accustomed to the constant improvement of methods grow able, not only to survive them, but even to initiate and to profit by them. If the thing be possible, democratic government unquestionably owes it to the people to cultivate their power of readjustment, and thus to lighten the evils of the progress which it encourages.

Possibility of training in power to readjust

But it may be said that we have here an inherent defect of the inferior mind, which no education, however democratic, can hope to remedy, any more than we can by legislation make equal men whom nature created different. While this proposition is largely true, nevertheless, education can probably do much to increase adjustability, even among inferior minds. It will be mere repetition to discuss here the essential elements in the education of reason. Suffice it to note that the education which will do most to cultivate flexibility is one that does not content itself with facts and methods, but insists on reaching principles, one that is continually compelling the utilization of resources already learned by presenting problems involving them, and one that invokes a variety of situations resembling

those of life, wherein the pupil is compelled to exercise his powers of analysis and judgment. It is hard to take part in the activities of a rational and progressive world without catching at least a modicum of its spirit and power. Such a world the modern school is striving to become.

Flexibility is, of course, the most extraordinary attribute of the leader. The endeavor to cultivate such a trait means, therefore, training in leadership. In a democracy it is implied that each possesses some of this power, some capacity to take part in the political, social, and industrial life as an independent and, indeed, a dominating agent. The school that studies its pupils will especially cultivate leadership along those lines in which the special aptitudes of each pupil lies. Thus flexibility appears most clearly in the field of one's vocation, and depends on the extent to which it is mastered.

Such training should be especially adapted (*a*) to develop mastery of a specialty and

On the other hand, the mastery of a vocation means the mastery of the social and physical conditions which that vocation serves. Thus training for leadership implies broad training. The leaders in any field are those who are most thoroughly acquainted with the human needs to meet which this field exists. Hence, as vocational training advances to greater professional skill, it inevitably broadens into greater liberality. If education, in its zeal to make the specialist, forgets the problem of the adaptation of his vocation to the needs of human life generally, it is, indeed, neglecting flexibility, and, at the same time, mastery. No man knows a vocation unless he knows its value, and the knowledge of uses and values must be added to that of causes and principles, if one is to be master of his business rather than to have a business that is master of him.

(*b*) to develop skill in relating the specialty to life

(2) Thus flexibility may be said to be the aim of the highest and most liberal aspect of vocational training. It is that which liberalizes the vocation, making it masterful and free. It leads directly into the social environment, in which the demand

for the vocation is found. It is, therefore, closely allied to the second, the humanistic phase of liberal culture; that is, education for social coöperation. Such culture includes moral, political, and religious education, in addition to training in manners and to familiarizing with the current interests of society and the practices connected therewith. It is necessary to the equipment of those who would get on in a world where men work directly for society and only indirectly for themselves.

(a) Need in a democracy of education for social coöperation

In a democracy education for social coöperation assumes for all the importance which in aristocratic government it has for the ruling class. There is a natural though unjustifiable assumption that in a free government the public interest can take care of itself. Since aristocracies govern so largely to exploit, it has been hard to establish the ideal of public office for service. To the masses the opportunity to take part in political life has often appealed as only a chance to share in the "graft" of leadership, to make money. If we are all to be governed in the interest of exploitation, it is better to be under an aristocracy, whose incomes and positions are so permanent and sure that they can afford to attend to the interests of the governed, rather than by a horde of adventurers to whom the temporary enjoyment of office is regarded as a means of getting rich quick.

Aims of education for social co-operation

Education for social coöperation should aim at three things: (*a*) to create an appreciation of the interdependence of the individual and society, so that each shall find in the interests and in the welfare of the whole the basis for his own interests and welfare; (*b*) to create the ideal that "public office is a public trust," that is, that, like any other vocation, it is an opportunity to serve society for a stipulated reward; (*c*) to create the spirit of independence, of initiative, and of leadership in matters that concern the public tastes and welfare. As contributory to all this, there should be training in moral ideals, training

in tact, training in methods of social coöperation, study in the humanities that broaden one's comprehension of human nature and of human issues, and study of the sciences that reveal the laws of individual and social action. Such a program is, of course, a constantly expanding one, but it is certain that no grade of intellect should fail to receive what it can of this sort of education, and, hence, that in no stage of instruction should it be without liberal representation.

Use of the game in such education

Among the agencies for this sort of training, play and the independent student activities are of fundamental importance. The educational value of the game lies in that it leads into social coöperation and the avocations. To the playful activities of the student, the humanistic studies should be made subsidiary, having the function of contributing to these fairly independent pursuits of the school the intellectual foundation by which they gain meaning and permanence.

Lack of social training in our schools

The higher schools of the democracy have been adapted from the schools of the aristocracy, and they have preserved the antique program of studies, but have neglected the social life that centered about this. Thus that which was rapidly becoming the less valuable factor of the older schools was especially cared for in the newer ones. On the other hand, democratic education has of necessity stressed more and more the vocational factor. Combining the two tendencies, our schools have concerned themselves in giving the things that are necessary in order to get a living, together with certain "hall-marks" of learning, instead of becoming centers of free and active social life. The time has come, not only for a renaissance of moral and religious culture, but also for the active development of the social life of the school. In this we may find a means of cultivating both the aristocratic virtues, including the capacity to lead, and those traits that serve as a foundation for the liberal intercourse of a democracy.

(3) Democratic education involves education for leisure

(3) Education in social coöperation reaches out into education for leisure, — education which, like play, is founded on a love of activity for its own sake. The classes upon whom democracy has thrust the burdens of government have been in the past quite as free from leisure as from leadership. They are being forced by the exigencies of the new political life to learn what the public duties of a citizen of a republic are. They will also be compelled by the growth of leisure to learn how this may most worthily be employed.

Rise of universal leisure in democratic life

The development of the conception that to have no vocation is unworthy is no more characteristic of a democracy than is the rise of the notion that all should have a certain amount of leisure. The vacation is quite as typical of to-day as is the "strenuous life." The eight-hour law and the Sabbatical year, the summer outing and shorter business hours, are all, doubtless, symptomatic of a time when the program of life for the general public will contain a very considerable amount of time that can be devoted to avocations. The greater effectiveness of modern means of production, — a condition that, doubtless, tends to produce the illusion of strenuousness, where in reality little if any more energy or time is used than when life seemed slower, — constitutes the most important cause of the growth of leisure in recent times. Moreover, a tendency to systematize life, which is associated with the growth of very complicated business systems, results in specific and prearranged periods of relief from work rather than irregular ones.

Tendency to abuse leisure

The growth of leisure brings with it problems of considerable importance and difficulty. In general, it may be said that both irregular and newly gained leisure tend to be abused. Men whose lives are absorbed in the vocation are prone to look upon time spent away from it as properly to be given to amusement. But mere amusement, even when it is genuinely recreative, represents after all the least of the uses of leisure. For leisure

is the parent of the arts and the sciences, and these are the parents of the higher civilization. What leisure has done for the race, it may also do for the individual. When properly employed, it is the most important source of personal growth. When improperly employed, it is the creator of idleness and vice. incompetence and degeneracy. Eight-hour laws may be, as President Eliot suggests, a positive harm. If they merely furnish a better chance to get drunk, they are a curse rather than a blessing.

Need of culture in the use of leisure

Now in order that leisure may be employed in ways that are not only harmless but also contribute to human betterment, the child needs a culture looking toward the development of interests and capacities that will afford a fruitful as well as an agreeable use of whatever free time the fortunes of life may place at his disposal. It has already been noted that children need to be taught to play. The free intercourse of men in society, their athletic sports, their social entertainments, their intellectual and artistic diversions, all need to be determined by taste and a sense of relative value for the total aim of living. In order that this may be the case, the child should be led to expect from sport something more than amusement, and to feel uncomfortable unless he gets it. The study of the humanities, of the arts and the sciences should continually react upon the judgment as to what pursuits are most desirable for leisure. In order that this result may be brought about, the independent activities of the school, from which the social occupations of leisure take their origin, should constantly be affected by the school studies, and should affect them in turn.

Tendency of the avocations in the United States to improve in quality

When we reflect upon the occupations of leisure in the United States, we are struck not only with their diversity and the aimlessness of many, but also with the fact that their general character tends toward the better. The growth of travel, the gradual disappearance of gambling and mere "sporting," and of the

more brutal athletic sports, the development of the distinction between the amateur and the professional in sport, and the constant reaction of the ideals of the former upon the practices of the latter, the growth of interest and of taste in the drama and in music, the rise of art, the establishment of museums of all sorts, the spread of libraries and of reading, the growth of club life that more and more represents culture and public service as well as mere entertainment, the development of a great system of parks, from those preserving the wild grandeur of the mountain to such as are the breathing places of the city, the creation of playgrounds, gymnasiums, and baths, the appearance of such societies as the Young Men's Christian Association, all these and many other changes mark the introduction of an epoch when the art of spending one's time nobly will not be confined to a privileged class. Many of the new attractions are, in the fashion of the day, condemned as degeneracy, whereas as a matter of fact they represent merely the forms which the higher intellectual, social, and artistic life takes when it spreads to the masses. The newspapers, with their sensations and their somewhat cheap science and art, the popular novel, the commonplace drama, are the product of the democratization of culture, bringing with it, on the one hand, an enormous demand for cultural products, and, on the other, vulgarizing to some extent the standards of taste.

The democratizing of culture and the vulgarizing of taste

Nevertheless, we may hope that the democratization of culture vulgarizes standards only to elevate them, and that the overproduction of culture material will work, as overproduction usually does, to produce variety, to enable selection, and thus to promote progress. This modern movement may not only extend the higher enjoyments of leisure to the masses, but in the long run may bring forward new excellences. It is not at all unlikely that the further growth of the arts of leisure depends very considerably upon their ceasing to be the exclusive prop-

Democratic materials as a basis for advance in the higher culture

erty of a privileged class. Certain it is that the ideals, the interests, and the needs of life of the democracy have contributed to the creators of science, art, ethical ideals, and the form of social intercourse an extraordinary amount of inspiration and of new material.

Need that the school should purify culture

The work of selecting this material and of purifying and exalting popular taste must be done very largely by the school. The popular education of the nineteenth century was responsible in great measure for the democratization of culture. The popular education of the twentieth century should strive toward its purification. After creation comes selection, after originality arises taste, and judgment should be the successor of imagination. While the creative forces of democratic life, far from having spent their force, have in reality only begun to evince their possibilities, nevertheless, it is high time for the selective agencies to be set in motion more vigorously. The salvation of the creative work of the future lies in the guidance of the critical work of to-day.

Summary

Thus education in a democracy means a vocational training for each and liberal culture for all. So far as liberal culture is concerned, it means, first of all, that training which will ensure to each as much flexibility, or power of readjustment, as his native endowment permits. Thus he is given his largest possible measure of mastery over his vocation, of leadership in it, and of power to correlate it with the mass of activities of social life. The highest training in the vocation leads inevitably beyond the vocation. It leads first into those sciences which give principles that underlie not only the one, but also very many vocations. It leads further into social knowledge, judgment, and skill, without which effectiveness in the vocation as well as general participation in the common institutional activities of society is impossible. Lastly, it leads into those phases of culture that have been and still are pursued primarily

for their own sake, because not only the general organization and the ideals of society, but also the character of the vocations of men, are continually modified and recreated by this culture. Liberal education cannot, therefore, be separated from the vocation. It finds what is, perhaps, its most important function in liberalizing the calling, exalting it, making it masterful and noble. It can stamp out the disease of mere commercialism, and substitute the health of public service that is worthy of its reward. On the other hand, it needs the vocation to save it from vagaries, eccentricities, and trivialities, to preserve for it a sense of relative values, and to bring it into that integral relation with life through which alone the products of men can survive. For life has many aims, and in the long run each exacts its appropriate service.

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